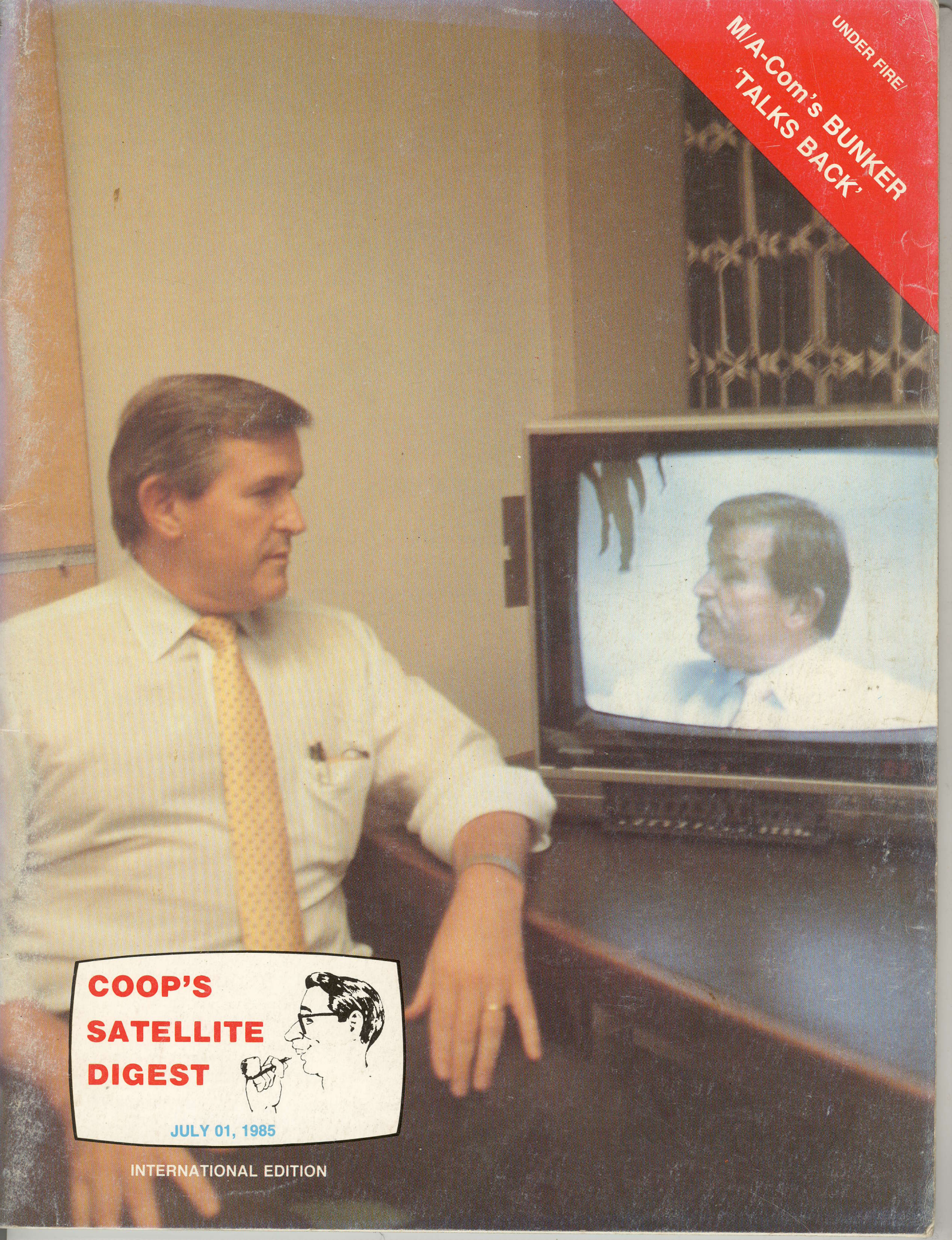


UNDER FIRE
M/A-Com's BUNKER
'TALKS BACK'



**COOP'S
SATELLITE
DIGEST**



JULY 01, 1985

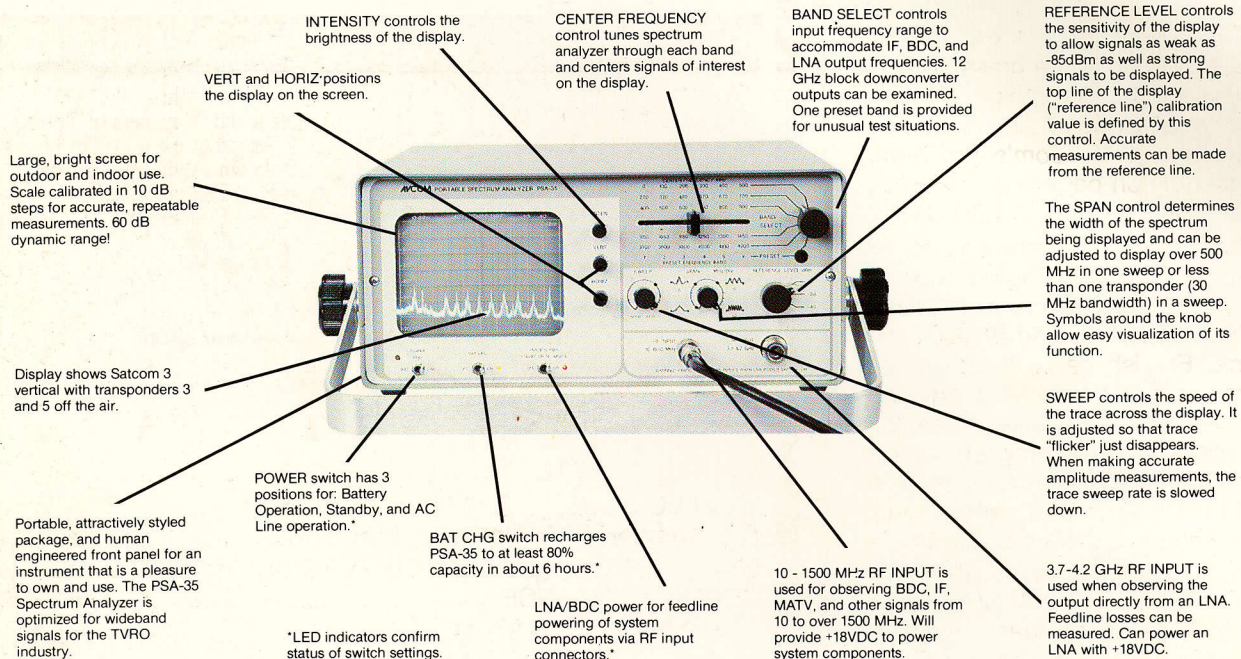
INTERNATIONAL EDITION

AVCOM's PSA-35 Portable Spectrum Analyzer

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Basic enough to begin with—

Sophisticated enough to grow with!



KEYWORD EXPLANATIONS

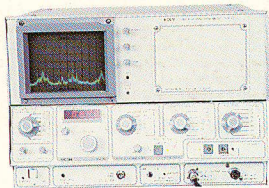
SPECTRUM ANALYZER — an instrument used to display signal amplitude vs. frequency over a selected range of frequencies (bandwidth). Amplitude is shown by the height of the trace on the screen.

REFERENCE LEVEL — in our context, a line at the top of the display that defines signal level at that point. Equally spaced lines below it at 10 dB intervals enable easy readout of various signal levels.

dBm — the most useful unit of measurement of signal strength (power) for our industry. It means decibel referenced to 1/1,000 of a watt of power. The following list will help you put dBm values into perspective:

- +20dBm — 100 mw (1/10 watt)
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- 10dBm — .1 mw
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AVCOM's PSA-35

**THE MOST VALUABLE TEST INSTRUMENT
YOU CAN BUY FOR INSTALLING
AND SERVICING TVRO SYSTEMS!!**

TOP OF THE MONTH

M/A-Com. Have they received the 'short end of the press stick' by becoming the 'scrambling messenger'? In a two-part interview for print, we visit with M/A-Com's **Jim Bunker** starting on page 8 in this issue, concluding in our July 15th CSD/2.

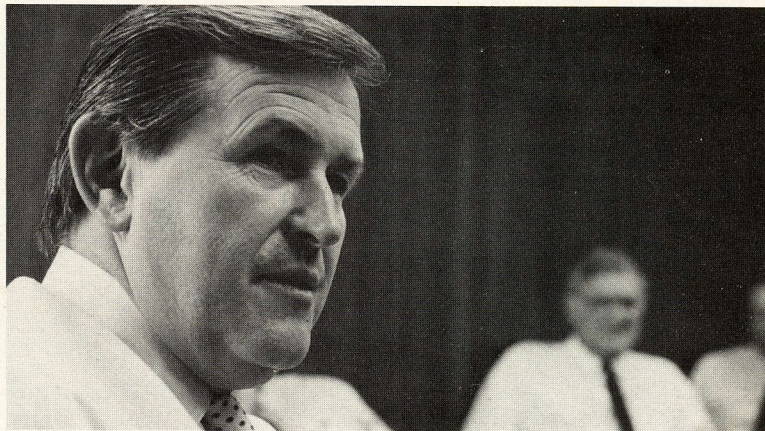
WITH some fanfare and to the surprise of many, England has removed ALL restrictions from private TVRO ownership and SMATV systems. English cable is upset, unscrambled programmers are concerned, but there are movies and sports and news programme options free for the taking on 3 to 6 foot dishes. We look at what this means to European TVRO this month.

HIGH voltage lines; are they capable of interrupting 4 GHz reception? A research team from the **American Electric Power Company** in North Liberty, Indiana conducted testing to determine the extent of 'PLI' (power line interference) under some very adverse conditions. A unique report, in this issue.

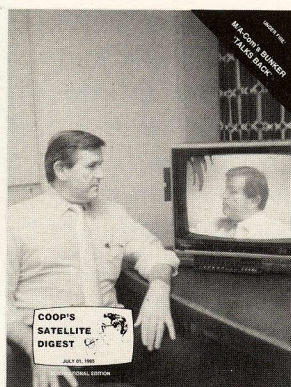
20/20's Hugh Downs, a home TVRO user since last fall's Young Astronaut Program inauguration, does a positive, upbeat piece on home TVROs at a time when the industry badly needed a shot in the arm. We report, also, this month.

JULY 01 1985

COOP'S COMMENTS	page 4
M/A-COM's BUNKER TALKS BACK	page 8



TVRO COMES TO THE UK	page 16
HIGH VOLTAGE LINE INTERFERENCE/ E.J. Koegler, W.C. Pokorny, W.R. Roy	page 28
20/20 IS GOOD VIEWING FOR TVRO SELLERS	page 38
CORRESPONDENCE	page 46
TRANSPONDER WATCH	page 54



OUR COVER/ James F. Bunker, Senior Vice President of M/A-Com, Inc. answers criticism of M/A-Com's handling of descrambler introduction in a candid interview appearing on page 8 here; and on the BORESIGHT TV program starting July 18.

COOP'S SATELLITE DIGEST



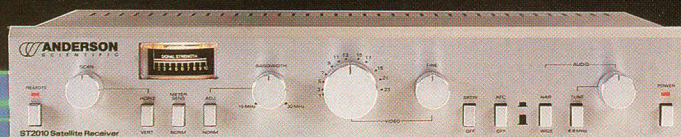
INTERNATIONAL EDITION

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Anderson ST2010 Master Receiver

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The Anderson ST910 Slave

The ST910 is a basic, low-cost, block downconversion satellite receiver intended for use in auxilliary viewing areas of a home or business. The ST2010 (or ST1010) serves as a Master Control receiver, while the ST910 Slave provides independent channel selection to other rooms and televisions. The ST910 is the ideal receiver for multiple home and other multiple unit systems, with an ST910 provided for each dwelling.

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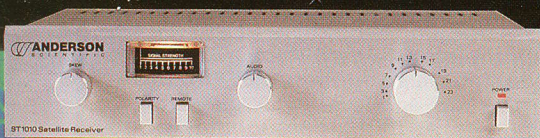


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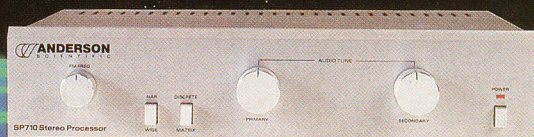


Anderson ST1010 Receiver

The ST1010 is a simple-to-operate, yet complete, block conversion satellite receiver. The ST1010 is intended for use in affordable single television systems, or as an economical Master receiver in multiple television systems. The ST1010 is also ideal in multiple home or multiple unit hookups where signal strength metering at each location is desired.

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- Video, Audio, TV, and Subcarrier Outputs
- IR Remote Option



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The SP710 is designed to provide high quality stereo from any of Anderson Scientific's block conversion satellite receivers, in a housing that matches the models ST910, ST1010, and ST2010. In addition to the matrix and discrete stereo handled by many other processors, the SP710 provides the ability to process multiplexed stereo. Further, the SP710 has a tuneable FM output which can be input to any FM radio or receiver.

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CHOICE OF FINISH!





COOP'S SATELLITE COMMENT

- SCRAMBLING/ Still With Us
- AVOIDING Financial Disaster
- NEWSWEEK/ Labels us 'Pirates'

AND 'IF' They Do (scramble)?

When I sat and talked with United Video's **Roy Bliss** in Tulsa in May (see CSD for June 01; **Coop's Comments**) I was at first amused as Roy told me how some old friends of mine, cable television system operators in Oklahoma, were so 'down' on TVRO. I chuckled remembering how a man with 500 cable subscribers had been able to rake in \$5,000 a month in the 'old days' before HBO and premium channels came along, spend \$1,500 a month to manage and operate his system, and then live very nicely off of the remaining \$42,000 a year. With HBO now on his system I pictured what he was probably doing with another \$2,500 a month 'net' (or \$30,000 a year). Probably bought himself another airplane.

But after the remembrances had passed and Roy had moved onto another subject, the reality of what he was telling me was sinking in.

"Level with me Roy; do you think that the cable operators can actually force people running uplinks for WTBS, CNN, WGN, WOR and so on to scramble? Really???"

Roy leveled with me. It is inevitable, he believes. And I believe Roy because I have believed Roy Bliss for the nearly twenty years we have known one another.

Later, jogging to Los Angeles via a plane change in Salt Lake City from Tulsa, I considered what this would really do to home TVRO. Let's suppose that everything a grade above 'the Weather Channel' does scramble; **then what?**

First of all, we have been accepting the assumption that only the premium services will scramble. We have a 'pledge' from a group of TVRO suppliers represented by Delta's **Sandy Wirth** that **even if** all of the premium programmers do scramble, there will be a 'new' just-for-home' TVRO premium service up there. I fell into the same 'trap' that most everyone else did; **"if they take away 'our' HBO, we'll create a new home-style HBO."** I saw a mild hiccup in TVRO sales but not total devastation when this transition occurred.

But suppose we lost say **20 channels**, all of the really important ones including **all** of the premiums, **all** of the indies, CNN, ESPN and so on. **Suppose?**

What would **that** do to TVRO sales and industry growth? I am an optimist but I am not naive. It would stop us dead.

Could the same six fellows who have promised us "There will be a **replacement** for HBO" also promise us "There will be replacements for the **other 19 channels** as well, should they scramble???" Raising perhaps \$5M to get a single movie or premium service operational seemed like one hurdle; raising perhaps 20 times that to get 20 channels going seemed like quite another hurdle.

Roy Bliss had told me that on their own, United could not afford to scramble WGN (plus KTVT and WPIX). He had also told me that he felt that a firm such as **Caanan Communications** might make it work. They are out there right now trying to raise \$100M for the project. So what happens if somebody, Caanan or some replacement, **does raise \$100M** and they **do get** each really important service to scramble?

The concept is that with everything of importance scrambled, virtually every TVRO owner would decide to buy a descrambler. However, until we know far more than we now do about what the charges per channel might be or how the equipment will interface with our existing (and yet to be sold) terminals, **how can we really project**

the impact of all of this on our sales patterns and future growth?

Suppose everybody decided that \$12.95 a month, as HBO has selected, would be a 'fair price' for their channels? Obviously the average home could not and would not select very many \$12.95 per channel-channels because they couldn't afford more than three or four at most. And if they could **only afford three or four**, would they even bother to buy a C band TVRO? Would the three or four they selected justify paying \$3,000 (or even \$1,500) for a C band system? I don't know, and nobody else does either.

Yes, I can count and if 20 transponders scramble but there are 100 up there, wouldn't those 80 left unscrambled make a C band terminal still attractive? **Let's be honest, OK?** Not nearly as attractive as they are today. Afterall, how many of us can sit and watch **Dr. Gene Scott** for longer than it takes to consume a can of beer? **PBS?** Wonderful. How many terminals have **YOU** sold lately because of **PBS?** Or **Nickelodeon?** or **PTL?** Or even **ARTS???** I'd hate to have to make a living selling services which continue to flounder with their monthly transponder bill after several years of trying to break even with the cable audiences.

So what does all of this tell us?

Well, it serves as an 'early warning.' Our industry scrambling-strategy to date has been to punt the ball out of our side of the 50 yard line each time it crossed over. Keeping the ball in the other guy's territory makes him defensive. At the same time, we have perhaps been too cocky in assuming that only a handful of premiums will scramble, and that as we continue to march into suburbs stealing customers away from cable that the cable guys are just going to roll over and play dead.

I am reminded, strongly, of what happened in the cable industry back in the late 50's and early 60's. I was a cable operator then and I was happy as a frog in a new pond after a spring downpour, building my cable lines and playing with my 'state of the art' 12 channel Blonder Tongue headends. I built big antennas and climbed poles and strung cable 14 hours a day because I loved what I was doing. Then some guy 300 miles away from me went into a **major California city** and built a cable system, and the TV broadcaster in that town came unglued and filed with the FCC. Before I knew what happened, **the FCC had ordered all new cable construction to cease** and I was out of business almost overnight. I survived, but I stopped growing for four years.

Now here we come along minding our dishes and staying out of people's way by installing systems in rural America and small towns. But we get so good at what we are doing that we start selling systems in suburbs and we even start bragging about **'stealing customers away from cable.'** Fortunately, we may not be as 'legally vulnerable' as cable was back when the broadcasters got the FCC to shut cable down (it lasted nearly **8 years** by the way!). But we are perhaps more vulnerable, economically, since the programming we are selling is programming owned (and controlled) by the cable folks. **And they DO have some rights here.** We helped give them those rights by pressing for passage of the 1984 'Cable Rights Bill.' Remember that bill? It supposedly re-affirmed our own legality at the same time.

But at a price. That price being that now we have to anticipate that all of that magic programming falling out of the sky, into our backyards,

is going to be scrambled. Between too much equipment, too low prices, and the direction scrambling is going, gosh . . . **this may not turn out to be such a 'neat year' after all.**

So what should our priority be?

First of all, resolving the 'HBO scrambling issue' did not clear the way for unprecedented TVRO growth. Quite the contrary, we may look back on the HBO move as the first and easiest chapter in a book we will still be writing ten years from now. In other words, **this** is no time for us to be patting ourselves on the back and walking away from 'scrambling as an issue.' The real issue as I perceive it is still ahead.

There is a very dangerous mood loose in the industry at the moment. And that is **'we have won.'** Hell's bells . . . we have barely been up to bat. This is no time to relax our efforts to fashion a **long-term scrambling policy** which recognizes that scrambling will eventually engulf ALL of the more popular transponder services, regardless of their origin or cable value. Up to this point, we have focused solely on the premium services and primarily on HBO. **And that has been a mistake.**

I do not believe we can resolve scrambling 'a transponder at a time.' We'll lose the war even if we (continue to) win a few battles by approaching it in this manner. A high level study committee needs to be appointed within SPACE to address the long-term ramifications of scrambling, with the worst case assumption that the scrambling fire is going to get out of hand and invade the non-premium services as well. After talking with Roy Bliss and having my eyes pried open several dB, I thought it might be a good idea to talk with several **other people** representing some additional services. I did this and was quite shocked to find out from each that they had never previously been contacted by ANYone from within our industry's management structure. Each had the perception that we thought **'we were too good'** to 'bother asking them' what their plans are or what they might be willing to do 'with us' rather than 'agin us.' Since I resigned my position on the SPACE Board of Directors more than a year ago, I am not even a 'Minister Without Portfolio' so my contact with each (six in all) was more as a self-appointed Ambassador of goodwill. I found each considerate of our problems, interested in a positive way in working with us, but negative about how we (as an industry, through our trade association) have handled 'programmers' to date. The first job a SPACE committee formed to 'talk with programmers' must do is to try to convince the programmers that we are not semi-reformed pirates there to rape and pillage their corporate quarters. One with a dry sense of humor told me **"If anyone from TVRO except you had come up here to see me, I would have locked our secretaries up in a windowless room and put the corporate silverware in the vault."** I laughed but the message was very clear. TVRO, and SPACE, are not held in high esteem in programming circles. And I can't say as I blame them, totally.

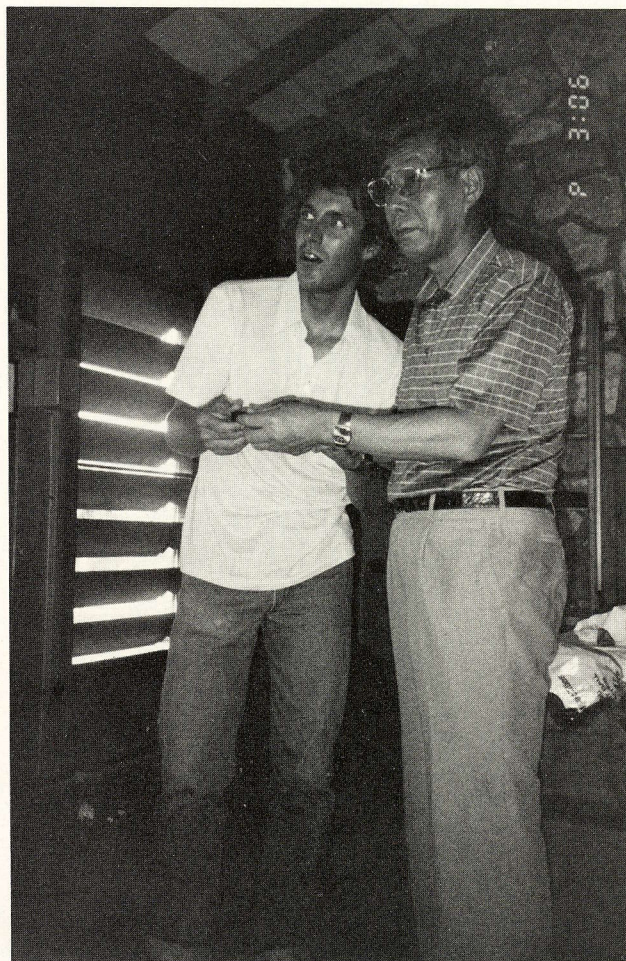
Scrambling is a far more serious threat than we have allowed ourselves to believe, previously. Cable is incensed with us and every time we sell another TVRO into a backyard where cable is available, they become more incensed. Cable is not powerless to fight back and just as soon as they REALLY get their act together, we are going to have one hell of a battle on our hands. We can't fight them in courts nor in the halls of Congress exclusively; that is far too dangerous.

(As an aside, I am also told that since HBO came out with their plan to sell to home TVROs, the people in Congress now believe **'our scrambling problems are resolved.'** What's bad about that? Whatever interest there may have been to help out with a two-year moratorium against scrambling, or with an FCC administered review of scrambling rates, has all but disappeared; HBO and the other cable programmers have very effectively de-fused our pleas for help in Congress!)

I propose a re-assessment of where we think we are going, and a change 'in our attitude' towards cable programmers. I'd much rather fight the coming battle with olive-branches than pitting our foot soldiers against the enemy's tanks.

DOCTOR Konishi 'Visit'

I first became acquainted with **Doctor Yoshihiro Konishi** some ten years ago while reading through some technical papers published by the IEEE. There I discovered a very unique approach to low-cost microwave reception equipment design; something called 'planar



"AND THIS IS GALAXY 1" Marshall Foiles shows Doctor Konishi how to use his handheld remote control on the Uniden 7000 series receiver we had installed on the dish serving his bedroom, while he visited. We suspected that because they don't have 4 GHz TVROs in Japan, that perhaps Doctor Konishi had never really been afforded the opportunity to 'play with' his product in the real world. We were correct in our assumption and Doctor Konishi spent several hours finding out what thousands already knew; the 7000 receiver is a superb unit!

construction.' We might call it microstrip or something similar today but back in the mid-70's the very idea of 'printing' or 'die-cutting' a complete microwave receiver 'front end' on a piece of substrate or aluminum was totally novel. The IEEE 'paper' was my first introduction to this concept and it immediately was apparent to me that if you could 'stamp out' or 'print out' a complete 11/12 GHz receiver front end (i.e. RF in, IF out), using mass production techniques and high precision, you could also reduce satellite video receiver costs by a factor of 100 or so. The man who created this concept, while directing research at the well known Japanese national network 'NHK,' was Doctor Yoshihiro Konishi.

In not many years this approach would become known as the 'Konishi Receiver' and it would serve as a 'bright light' to lead the way for dozens of receiver designers to abandon old-fashioned, expensive part-by-part receiver designs. Much of what we now take for granted at 4 GHz, and virtually all that we see in 11/12 GHz satellite video receiver front ends had its start with the pioneering work of Doctor Konishi.

When, in the fall of 1983, a group of 25 American and Canadian TVRO industry people installed a trio of satellite dishes in **Sri Lanka**

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Fruitridge Avenue, Terre Haute, IN, 47805, (812) 238-1456, (800) 457-3330, IN Watts: (800) 321-7291. **IOWA:** YARD ELECTRONICS d/b/a SPECTRUM SATELLITE, 3200 Sunnyside Avenue, Burlington, IA, 52601, (319) 753-0176, IA Watts: (800) 533-2644. **KANSAS:** HOME CABLE, INC., 2231 B Centennial Road, Salina, KS, 67401, (913) 825-7939, KS Watts: (800) 547-TVRO. **NATIONAL SATELLITE COMMUNICATIONS**, Kansas City, KS (913) 888-6333, KS Watts: (800) 432-0141, National Watts: (800) 633-5027. **NATIONAL SATELLITE COMMUNICATIONS**, 9200 Cody, Overland Park, KS 62214, (800) 833-4485. **KENTUCKY:** QUARLES NORTH, 515 29th Street, Ashland, KY, 41105, National Watts: (800) 228-5761, KY Watts: (800) 562-8862. **SATURN DISTRIBUTING**, Highway 15, Jetts Plaza, Jackson, KY, 41339, (606) 666-5118. **SOUTHERN SCIENTIFIC, INC.**, d/b/a WOOD TVRO, 300 Walnut Street, Fulton, KY, 42041, (502) 472-3704. **LOUISIANA:** INTERSTATE ELECTRIC, 1419 Culpepper Street, Shreveport, LA, 71130, (318) 459-3641. **SATELLITE EARTH STATIONS**, Route 6, Industry Lane, Box 17JM, Covington, Louisiana 70433, (504) 893-4514, National Watts: (800) 654-9144, LA Watts: (800) 558-0019. **SATELLITE EARTH STATIONS EAST, INC.**, Highway 13 & Pine, Mamou, LA, 70554, (318) 468-2203, National Watts: (800) 726-2110, LA Watts: (800) 252-3307. **SATELLITE SPECIALIST**, 240 Columbia Street, Bogalusa, LA, 70427, (504) 735-9915. **MARYLAND:** LEISURE TECH, LTD., 914C Bestgate Rd., Annapolis, MD, 21401 (301) 266-6080. **MICHIGAN:** ECLIPSE ELECTRONICS, 3605 Division, Wayland, MI, 49348, (616) 792-9122, MI Watts: (800) 762-8626. **MINNESOTA:** EARTH STAR COMMUNICATIONS, INC., 7401 Old Central Avenue N.E., Fridley, MN, 55432, (612) 786-1916. **MISSOURI:** NATIONAL SATELLITE COMMUNICATIONS, Metro Kansas City Area, (800) 833-4485. **NEVADA:** SATELLITE SALES & SERVICES, 3325 Western, Las Vegas, NV, 89109, (702) 732-3288. **NEW YORK:** MOOG ELECTRONICS, 2500 Walden, Buffalo, N.Y. 14225 (716) 681-7200. **NATIONAL SATELLITE COMMUNICATIONS**, 21 Century Park, Clifton Park, NY, 12065, (518) 383-2211, National Watts: (800) 833-4485, NY Watts: (800) 522-3538. **NORTH CAROLINA:** C.D.C.C., INC., Route 3, Ellisboro Road, Madison, NC, 27025, (919) 427-0436. **MICRODISH**, Rt. 2, Box 53B, Youngsville, NC 27596 (800) 682-8000. **QUARLES OF CHARLOTTE**, 801 F Atando Avenue, Charlotte, NC, 28206, (704) 374-0153. **STARTECH, INC.**, 1620 Hwy. 6470 S.W., Hickory, NC 28601 (704) 322-6285. **STARTECH, INC.**, 1403 Mechanical Blvd., Garner, NC, 27529, (919) 779-0274, National Watts: (800) 362-6154. **NORTH DAKOTA:** JOHNSON ENTERPRISES, Highway 281 South, Jamestown, ND, 58401, (701) 252-1431. **OHIO:** CARTWRIGHT COMMUNICATIONS, 7812 Red Sky Drive, Cincinnati, OH, 45249, (800) 543-8164. **MICRODISH**, 225 E. Main Street, Logan, OH, 43138, (614) 385-3200, National Watts: (800) 638-1864. **OREGON:** MICRODISH WEST, 1375 N.E. Forbes Road, Bend, OR, 97701, (503) 388-5193, National Watts: (800) 638-1864. **PENNSYLVANIA:** KRUPA ENTERPRISES, Rt. 150, P.O. Box 516, Avis, PA 17721 (717) 753-3732.

SOUTH CAROLINA: QUARLES SATELLITE SYSTEMS, 1616 Calhoun Road, Greenwood, S., SC, 29646 (803) 229-7990, National Watts: (800) 845-6952, SC Watts: (800) 922-9704. **QUARLES OF KINGSTREE**, Route 4, Box 398, Kingstree, SC, 29556, (803) 382-9802. **SOUTH DAKOTA:** WARREN SUPPLY CO., 300 E. 50th Street N., Sioux Falls, SD 57104, (605) 336-1830, National Watts: (800) 492-7736, SD Watts: (800) 952-3046. **TENNESSEE:** AMERICAN VIDEO CORPORATION, 5300 Memorial Blvd., Kingsport, TN, 37664, National Watts: (800) 344-0065, (800) 451-2553. **BEST RECEPTION SYSTEMS**, 141 S. Front Avenue, Rockwood, TN, 37854, (615) 354-2999. **ECHOSPHERE EAST**, 10536 Lexington Drive, Knoxville, TN, 37922, (615) 966-4114, Eastern Zone Watts: (800) 223-1507, TN Watts: (800) 421-9935. **IVS/INTERMOUNTAIN VIDEO SYSTEMS**, 1742 F Edgemont Avenue, Bristol, TN, 37620, (615) 968-2334, National Watts: (800) 824-8830, TN Watts: (800) 551-8104. **LEWIS ELECTRONICS**, West Elm Street, Humboldt, TN, 38343, (901) 784-2191. **NATIONAL MICRO-DYNAMICS**, 6153 Airways Blvd., Chattanooga, TN, 37421, (615) 892-3901, National Watts: (800) 854-0813, TN Watts: (800) 228-5649. **SATELLITE EARTH STATIONS OF TENNESSEE**, 1865 Airline Dr., Suite 4, Nashville, Tennessee 37210, (615) 889-3345, National Watts: (800) 522-8876, TN Watts: (800) 621-8876. **TEXAS:** DEL STAR SYSTEMS, 7800 Bissonnet Suite 200, Houston, TX, 77074, (713) 776-0543, (800) 358-6938. **ECHOSPHERE SOUTHWEST**, 3901 LaReunion Parkway, Bldg. 15, Dallas, TX, 75212, (214) 630-8625, SW Zone Watts: (800) 521-9282, TX Watts: (800) 521-9282. **SATELLITE EARTH STATIONS**, 1106 Smith Rd., Suite 101, Austin, TX 78721, (512) 385-0738, National Watts: (800) 325-5043, TX Watts: (800) 252-3457. **THE SAT SHOP**, 2423 S. Henderson Blvd., Kilgore, TX, 75662, (214) 983-3524. **VIDCO**, 903 West Cotton, Longview, TX, 75601, (214) 757-4911. **VIRGINIA:** INTER-MOUNTAIN VIDEO SYSTEMS, P.O. Box 59, Coeburn, VA 24230 (703) 395-6819. **STARTECH, INC.**, 29 Hammit Lane, Salem, VA, 24153, (703) 387-0062 (800) 221-4656. **WISCONSIN:** SATELLITE RECEIVERS, LTD., 1740 Cofrin Drive, Green Bay, WI, 54302, (414) 432-5777, (800) 556-8876.

MA-COM's BUNKER TALKS BACK/ DEFENDS 'MESSENGER' STATUS

James F. Bunker is a Senior Vice President of M/A-Com, Inc., that \$768,000,000 (1984 annual report) Burlington, Massachusetts headquartered firm which designed, under contract, the Videocipher scrambling/descrambling system which HBO and Showtime (amongst others) have elected to use in the satellite delivery scheme of things. Bunker has been getting the 'short end of the press stick' from CSD and others for some six months now, and he and others at M/A-Com feel they have been unfairly painted as the "cause of the TVRO industry's scrambling (and financial) problems" when, in fact, they have been but the "messengers delivering a message originated by others". It is the old Greek tale of cutting off the hand or head of the messenger who brings bad news to the emperor although the messenger had no part in creating the bad news.

Some background.

CSD first published a 'possible scenario' in our June 1984 issue. In that issue we suggested that **IF** HBO elected to utilize the M/A-Com (Linkabit division) Videocipher scrambling system, we were concerned that inasmuch as M/A-Com also built and sold TVRO receivers (and system parts), there was the 'possibility' that their 'insider status' as the scrambling system supplier might work to the disadvantage of their competitors in the TVRO receiver (and system) marketplace. We wrote that report merely as a 'warning' to other OEMs and distributors who, we felt, **had overlooked a dangerous situation**. Subsequently, in October of 1984, somebody at M/A-Com **re-printed** our June 1984 'editorial opinion' and 'highlighted' the editorial by placing extra comments 'in the margins'; **comments which clearly stated** that M/A-Com **did indeed consider itself** to have an 'insider position' in the sale of descrambler-capable TVRO receivers. This reprint was done without any authorization from CSD (although at least one M/A-Com executive would **claim** he had such permission), and the reprint was widely circulated to thousands of dealers.

As the scrambling scenario developed, two key 'players' emerged; James F. Bunker of M/A-Com and Cooper of CSD. Bunker became the 'heavy' and as HBO ran into problems with **its attempt** to market 'bundled services' to TVRO owners, and ultimately 'bailed out' with a 'go-it-alone' plan, M/A-Com, under the direction of Bunker, took the lead in attempting to 'organize' the satellite TV programmers into a common 'scrambling technique'. Cooper, meanwhile, was relying on published statements from M/A-Com and meetings conducted by M/A-Com with industry receiver OEMs to uncover potential problems he saw with both the scrambling hardware and the marketing technique created first by HBO and later adopted (and modified) by M/A-Com. All of this came to a



'pressure point' late in May when cable television interests decided that **they were going to play** an active role in the delivering of descramblers to home TVRO owners, and in selling 'scrambled service' to home TVRO owners.

With the entry of the largest cable TV interests into the mixture (**see CSD/2 for June 15th**), CSD's Bob Cooper traveled to M/A-Com corporate headquarters in Burlington, Massachusetts where he spent nearly 20 hours with Bunker, **Richard T. DiBona** (Chairman, President, and Chief Executive Officer), **Dr. Frank Brand** (Executive Vice President and Chief Operating Officer), **Dana W. Atchley, Jr.** (Chairman Emeritus of the Board of Directors) and additional executive and staff members of the corporation. The purpose of the M/A-Com visit was multi-fold:

- 1) As perceived by the TVRO industry, M/A-Com and Cooper were either on a 'collision course' **or had already collided**. This was having a certain 'unsettling effect' on an already troubled industry.
- 2) Information released by M/A-Com and their Linkabit division **often conflicted with itself**. Several specific questions regarding these information conflicts were to be addressed.
- 3) The M/A-Com image was 'tarnished' in some quarters and Bunker was anxious to 'clear the record' concerning just **who was responsible** for scrambling and why, he felt, M/A-Com was being blamed for scrambling fall-out which was beyond the control of M/A-Com.

There was ample precedent for such a meeting. Long before there was home TVRO, before the first TVRO industry 'show' in August of 1979, Cooper had served M/A-Com on two occasions as a paid consultant. In 1978 Cooper created a business plan for M/A-Com for 'low cost, low power, private microwave systems'. The present 21-23 GHz M/A-Com microwave products had their 'start' way back in 1978 in a 'game plan' created by M/A-Com executives and Cooper. Early in 1979, again **before there was a TVRO industry**, Cooper did a second business plan for M/A-Com, urging the firm to "be the first to enter the home TVRO marketplace" with complete home TVRO systems. This was at a time when M/A-Com was acquiring Prodelin (antenna company) and Cooper 'saw a nice fit' between Prodelin's antenna line and capabilities, M/A-Com's commercial TVRO receiver line and what he perceived to be 'the start of a significant home TVRO industry'.

So contrary to competitive press reports to CSD, the relationship between M/A-Com and Cooper was not 'adversarial'. "It was," as Cooper would later explain to Chairman DiBona "as accurate reporting as the information available to me would support; given the same circumstances, with members of my own family, I would have been no less complete nor any less accurate in writing about my own family. I don't see how a concerned journalist can follow any other 'doctrine-of-fairness'."

BUNKER'S Defense

Bunker's frank and directly-open discussion concerning the problems associated with the 'launching' of the 'scrambling rule' in TVRO was videotaped, in an interview-format, with Cooper. The segment-pieces will appear on **BORESIGHT (*)** starting July 18th. Extracts of this 'interview' appear here and will conclude in **CSD/2** for **July 15th**.

In CSD/2 for June 15th, we reported that a cable initiative, sparked by several of the major MSO (multiple system operator) members of the cable industry, portrays a system whereby between 20 and 30 of the cable programmer services will scramble, quite quickly. The cable system operator would like to be the distributor for both the descrambler hardware and the software; i.e. the programming service(s). To make this work, it is almost imperative that all programmers elect to use the same scrambling 'hardware' or system, and, that they 'cooperate' in operating a 'joint authorization/control center' to address individual descramblers for various 'levels' of service. At one point, six months ago, **HBO's game plan** was that **they would operate** this 'National Authorization Center'. HBO found a reluctance on the part of other programmers, such as Showtime, to 'join with HBO' in this project and as United Video's **Roy Bliss** explained in CSD for June 1st, and on **BORESIGHT** May 30th, he did not see anyway that 'natural

program competitors' could **ever work together** in such an activity.

Cable's John Sie (see **CSD/2** for **June 15th**) wants the cable industry MSOs to own or at least operate this 'National Authorization Center'. The concept of the center, originating at HBO, was dropped by HBO when they decided to back out of a leadership role in the scrambling launch. That left M/A-Com in the (uncomfortable) position of trying to keep the scrambler sales program moving ahead although there would be no 'leader' in the movement. M/A-Com stepped in, late in April, and said they would provide and operate the 'National Authorization Center'. Bunker on that plan.

"**(The plan) is very straight forward.** We believe that all of the (software) satellite delivered programmers ought to have their own business computer systems. But a pay service such as this requires a central computer, **a computer controlled network**, so that the individual programmers are multiplexed together on a control channel to the individual TVROs. Somebody had to take the initiative and create such a central control computer (system). We thought it should be an independent third party and M/A-Com, being the supplier of the encryption (hardware) system, took the position that the software development is very critical to a pay service. We are placing this control computer facility in an (existing) M/A-Com site on Long Island, where it happens there are 13 of the existing programmer channels now uplinking. That system has the capacity to handle as many as 239 transponders, on any satellite. And as it is initially configured, it will handle 24 separate programmers. We have told the programmers that we will operate it as a 'cost center'; for example, if there are ten separate programmers using the service and it costs \$1,000,000 per year to operate the center, each programmer would in my example pay an equal share of the 'center' each



SCRUTINY by M/A-Com/ sitting in Burlington headquarters, M/A-Com executives carefully study CSD/BORESIGHT television reports of their Videocipher descrambling system. Coop's series, appearing between May 30th and July 11th, was run in sequence so M/A-Com could evaluate the reports with Coop on hand to defend his statements.

year. Now, if down the road from our initial creation of the system, if the programmers felt they needed to take it over, fine. Or if some unrelated firm such as a (big 8) accounting firm wanted to run it, fine. But at least it is now off and running and it solves a critical part of the system concept. **Here we have a central system which all of the programmers can use**, it provides service to a single descrambler design so that the TVRO consumer will find he only has to acquire a single type of descrambler; **it is a start**. Somebody has to do it and many of the programmers came to M/A-Com and said 'M/A-Com, you should start this facility and get this started'. So we simply took on the responsibility of doing it and we will run it as a cost center until further notice."

For those 'joining us late', here is the concept. There would be only one 'variety' of scrambler/descrambler in use. At this point, you must make the assumption that we are really talking about the M/A-Com Videocipher family of hardware. Each programmer would encrypt with the Videocipher uplink equipment and each programmer would have his own 'list' of paying subscribers. Each programmer would feed his 'list' from his own on-premises computer into the 'control computer' which is operated by M/A-Com at their 'National Authorization Center'. The individual 'list of approved subscribers', in digital data address format, from each programmer would be multiplexed (i.e. mixed with other programmer lists) and transmitted via satellite to all of North America. On the ground, individual subscribers would tune through the dial and find those services they had agreed to subscribe to (and pay for) unscrambled while other scrambled services which they had not opted for would remain scrambled. M/A-Com's position in all of this is to operate the facility that 'multiplexes' the control-authorizations together and then transmit the 'multiplexed sum' of all of these authorizations nationwide via the individual uplink transmitters.

The 'attitude towards scrambling' of non-premium services has changed dramatically during the past sixty days. In April, only HBO and Showtime operations were committed to scrambling. ESPN and Disney were 'studying' the prospect; others had no planning going on. Now, virtually everyone on satellite (example; 'down to' The Weather Channel) marketing to cable TV sees the 'inevitability of scrambling'. Bunker on this 'change'.

"We've had discussions with many of these (programmer) people for well over a year. There has been a building ground swell here. HBO started it and when they had their system in and operational, that was one hurdle crossed. Then we had the legislation of last fall, M/A-Com announcing our control center and the acceptance by cable operators that they are not merely in the 'cable' TV business, they are really 'video distributors'. This has all moved towards the inevitability of scrambling by the majority of the cable-programmed channels. I may have rose colored glasses on, but to me this is all very logical; we will have firms that **program**, firms that **distribute**, and people who are **consumers** and each will share and have a distinct role in that business. Neither one more than the other is going to run, control or dominate the business as some of the press characterize. Being in the hardware side of this activity, it is not clear to me that any one side will dominate it; I see it ending up like any other 'normal' business."

If Bunker is correct, if scrambling is inevitable on a 'wide

*) **BORESIGHT** TV Program, created weekly as the TVRO industry's 'news-magazine' on video, airs Thursdays at 9PM eastern on F4, TR20.

All company employees must
recognize that the customer is
of paramount importance
and act accordingly.

A positive
"customer-orientation"
attitude must pervade
the entire organization.
Quality, delivery, technical
performance and service will
excel when everyone believes
that customer satisfaction
is the most important
critical success factor
for M/A-COM.

Richard T. DiBona

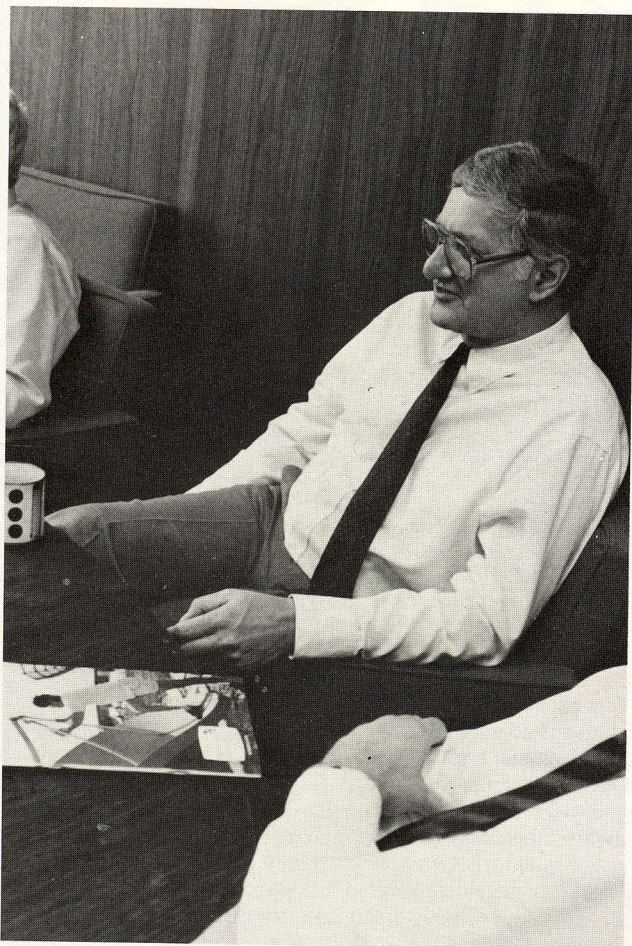
FIRM POLICY/ Chairman, President and Chief Executive Officer Richard T. DiBona posts this plaque on entryway wall to executive center in Burlington.

basis' in the cable programmer world, 'timing' becomes more critical. For example, at this moment ONLY M/A-Com receivers have been designed around the internal descrambler package (see CSD for **May 01, May 15th and June 01**). HBO has stated that they will **not begin** 'full-time scrambling' until some undefined point later this year 'when there are sufficient quantities of descramblers in consumer hands or in the pipeline'. SPACE, meanwhile has helped frame legislation which would create a **two-year moratorium** on all scrambling (from the effective date of the legislation) to give the marketplace the opportunity to assimilate descramblers and marketing techniques. Bunker on the need for such legislation.

"(This legislation) certainly would not have a positive effect on M/A-Com, in preparing hardware (and software) for the pay TVRO service. I have been talking with some of the staffers in Congress; people who report to the Congressmen or Senators who have already 'signed on board' as co-sponsors on this legislation. I came away from those meetings with the impression that Congress wants to insure that the TVRO owner has two or three things guaranteed-to-TVRO-owners **before** scrambling actually begins.

"One, the TVRO owner is to have **access** to the programming when the scrambling begins. You will notice I did not say 'if the scrambling . . .'; I said 'when the scrambling . . .

"Two, Congress would like to be assured that the home TVRO owner does not have to buy **multiple decoders** or



FIRM LEADER/ Richard T. DiBona is at the top of M/A-Com's 11,000 employee roster and has his sights set on pushing the firm beyond the \$1,000,000,000 mark in annual sales shortly.

different boxes for different services, since that would represent a significant economic burden on home TVRO owners.

"And three, that the consumer descramblers will be **available,** they will be in the pipeline before the famous 'sky goes dark' scenario occurs.

"I told these people in Washington that this has been the plan all along. That those three things **would take place before scrambling began.** Now, what about the SPACE sponsored 'scrambling moratorium bill'? If those three things do not take place between late summer and early winter **this year,** then the requirement for a moratorium would be strong. If, on the other hand, we see these three things taking place between now and (late) fall, I would and do question the need for a 'moratorium' bill."

Bunker, not alone, has an uphill 'battle' coming in Washington. Representatives of programming services (i.e. HBO) have also been making the rounds of Capital Hill congressional offices. Shortly, the cable industry through their trade associations (NCTA and CATA) will begin to assail Congress with mail, telephone calls and personal visits regarding this 'issue'. Bunker feels that as long as there is 'progress' with each of the three points he mentioned (universal access to programming, a single decoder box and universal availability of descramblers), **Congress has no reason to act** on the proposed moratorium.

CONSPIRACY Theory

There have been theories floated (and published and telecast) suggesting that M/A-Com might be a part of some 'grand conspiracy', perhaps in league with HBO, to stick television descramblers into consumer homes which were really 'digital data delivery machines' in disguise. We talked this out with Bunker and M/A-Com Chairman of the Board Emeritus **Dana W. Atchley, Jr.** Our concern was that because CSD tests indicated to us that high grade (read expensive) receivers were not required for descrambled **television,** the demand for higher grade receivers had to be rooted in some other 'business objective'. We had raised concern that receiver prices might increase by as much as \$100 at the dealer level to satisfy this other, undefined 'business objective'.

Bunker responded that **"There is no conspiracy;** the business plan you suggest, involving the delivery of data and electronic text, is far too advanced for us. We, frankly, are not that smart!"

Atchley amplified by pointing out that while the delivery of television might not require such 'high grade receivers', the delivery of the complex 'multi-tier addressing codes in digital form' does require a better grade of TVRO receiver.

Bunker on the question 'Is there a conspiracy here?'

"I'm glad that question is raised. M/A-Com has absolutely nothing to gain by creating uncertainty and upheaval in the TVRO marketplace. You must realize that **we are in the home TVRO business.** We are a large supplier of antennas to home systems; we supply receivers, special cables, down-converters, polarizers. Anything that M/A-Com did, does or might do which would inhibit the continued growth of TVRO has a direct impact on our profitability. If TVRO sales fall off, all of those products mentioned suffer in sales fall-off. There is nothing in our strategy or sales planning which would benefit M/A-Com if sales slowed down.

"I suggest some of the words which have been said or written about M/A-Com we teasingly refer to as 'the black hat syndrome'. I guess that 'the black hat' came with the contract in the sense that we, as the vendor of the Videocipher scrambling system, got tagged as 'bad guys' because we were perhaps unfortunate enough to 'win' the HBO encryption contract."

CSD first wrote in some detail about this subject some 13 months ago. A significant part of what we subsequently wrote came from within the 'bowels' of HBO. Yes, we had a 'deep throat' contact within HBO and we were frequently fed information which sent us down a number of investigative trails. The danger of dealing with a 'deep throat' is that if they are acting **at the direction of** higher-ups within their company, the journalist involved can get purposefully sent down 'certain trails' which will result in articles that indirectly support the 'deep throat's firm' in some tactical way. The contract between M/A-Com and HBO is very extensive and Bunker reveals how the 'deep throat' at HBO, feeding inside leaks to CSD (and others), put his firm at a disadvantage.

"There are certain things which were covered by a confidentiality clause appearing in our contract (with HBO). There were other items, perhaps not clearly 'protected' by the confidentiality clause, which we considered vital for discussion. For example, selling the descrambler models, licensing competitive manufacturers, or releasing the innermost receiver compatibility requirements; these were all contractual items which we agreed to in the HBO contract. We did all of this willingly and knowingly back a year or more ago. But very little of this was obvious and we, perhaps along with the programmers, did a bad job in explaining to the world what

those requirements were. I guess 'shame on us' for not explaining that more clearly to the TVRO industry."

What Bunker is telling us here is that whenever an 'evil', perceived or real, in the scrambling project has been discovered, we (CSD and others) have been quick to blame M/A-Com for creating a situation which our TVRO industry has labeled as 'another M/A-Com black hat act'. Bunker maintains that his firm has been somewhat powerless, because of the confidentiality terms of their written contracts with HBO and Showtime, to 'respond in kind' to the deep throat 'leaks' originating at HBO; and further that M/A-Com was originally tied down by contract to not only develop **and supply** descramblers for the commercial (CATV) industry, but to **also supply** a special version descrambler to the home TVRO industry as well. He is further telling us that the 'timing' or 'schedule' relating to the equipping of the CATV system headends with descramblers, and the subsequent equipping of the TVRO distributor pipeline with descramblers was 'a matter of contract'. **This is the same thing he is now telling Congress;** that there is 'no need for the moratorium bill' backed by SPACE 'since their contract written more than one year ago with HBO (and more recently with Showtime) recognizes the place in scrambling for home TVRO users' and takes into account the need for descrambler availability before HBO (and others) go to full-time scrambling.

ROOM For An Independent?

With the creation of the M/A-Com Long Island 'National Authorization Center', the control of addressing functions for independent (i.e. unrelated) programmers will be in place. As we have already seen, M/A-Com's stated position is that they are creating this 'center' because somebody has to do it, although they profess a willingness to 'spin off' this function to some 'independent third party' at some future date.

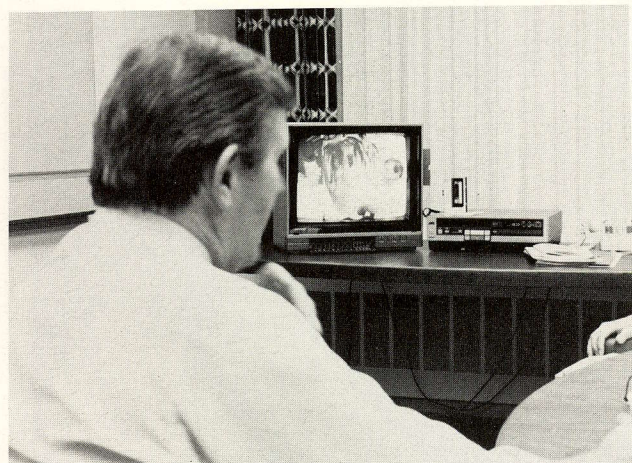
Cable's John Sie (see **CSD/2 for June 15th**) has stated that he sees such a center operated by a 'non-profit consortium of cable system owners'; i.e. the major cable MSOs. Others, such as United Video's Roy Bliss (see **CSD for June 1st** and as explained on BORESIGHT for May 30th) envision this working 'properly' **only if** a 'totally independent' program 'bundler' is operating the 'authorization center'. Bunker's vision calls for taking all of the 'direct costs' of operating such a center and equally dividing them amongst all of the cable participants. Regardless of who operates such a national center, is there room here for a totally independent program bundler, such as **Canaan Communications**, to function within the system?

Bunker on Canaan or a firm such as Canaan.

"The Canaan, or 'a Canaan', who packaged together or bundled a bunch of basic program channels with one or more premium program or pay services could come to us and ask us through the national control center to process say these ten program channels (a 'package'). **That is in fact the purpose of the national control center;** to allow a firm to bundle some selection of programmers which have agreed to be sold together and for there to be full control of which TVRO receives what programs.

"There is room in the way this system works for several firms, **each offering its own special mixture or blend of programming services**, to function through the national control center at the same time. Remember that the center has the capacity to handle as many as 239 different transponders at the same time."

That simply means that Bunker is assuring us that his Linkabit Videocipher is not intended for the 'exclusive use' of



'NOT SO' Jim Bunker says that M/A-Com will now be offering test sets for VC2000 family descramblers to off-shore suppliers **BUT** that these test sets will comply with National Security Agency dictums by not including the DES algorithm. The test sets will contain the necessary circuitry to reveal to the off-shore producer the 'bit error rate' of their products tested.

any single programmer or any single 'packager of programs'. He wonders why people have been fearful that the system has been designed as a 'monopoly' of anything. **He sees it as just the opposite of a monopoly;** a system which is 'big enough' and which has 'sufficient capacity' so that several program-bundling competitors could all use the same basic (decoder) hardware, each selling his chosen mix of scrambled programming and leaving the success or failure of any single service or any group of services (sold in 'bundles') to the marketplace. This had not previously been brought out.

And as Bunker related **"Shame on us at M/A-Com for not explaining this more clearly to the TVRO industry.** It has been referred to, perhaps a bit of a mis-nomer, as a 'free trade zone' or 'open access' to all of the TVRO owners through a common electronic facility. We are committed, morally, contractually and as a part of our corporate plan to operate in that manner."

ROOM For The MSOs?

The cable industry's new interest in serving home TVRO viewers, typified by the placement in the recently concluded cable convention of a panel dedicated to 'exploring cooperation between cable programmers and TVRO', has drawn considerable 'protest fire' from TVRO groups. Foremost amongst these has been SPACE which has maintained that TVRO viewers should have free and independent access to individual program channels (i.e. outside of the bundled offering) and that TVRO viewers should not be required to purchase their descramblers OR descrambled service from perhaps 'unfriendly local cable operators'. HBO, for one, has stated that they are willing to accept orders for their HBO and Cinemax service from TVRO owners either through the TVRO owner's local cable operator **or through** a national 800 number ordering service.

Still, there is a fear, and a resentment, at this stage about cable's big boys (i.e. the larger MSOs) dominating this area of retail activity. The cable personality who first seriously proposed a unified retailing of cable operators to TVRO owners is John Sie (see **CSD/2 for June 15th**). Bunker on the 'Sie Plan' as it relates to the technical and operational capabilities of the Long Island 'national control center'.

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Once you try this filter, you'll wonder where it's been all along!

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"I don't see any incompatibility here and I think it would be very good for the (TVRO) industry. If the major MSOs and the smaller cable operators were to agree to purchase the cable headend descramblers as a means of speeding up the total scrambling of the (20-30) cable program channels, this would in turn give them a vested interest in being a part of such a program. It is not clear to me (at this time) how a (cable) co-op bundler of programming would interface or address the 'central control computer' (which M/A-Com is installing on Long Island). I guess my opinion at the moment is that the central control computer would be best left totally independent from the cable co-op group so it is available freely and evenly for access by all of the programmers; whether they were a part of the cable co-op program or not. The key thing here is that John Sie's plan calls for cable firms to be willing to shoulder the economic burden of installing their own VC2C cable descramblers as an economic assist to some of the basic cable services to in turn invest in scrambling. This will be a big boost to getting the total program universe scrambled at an earlier date.

"At the present time, the cable headend units sell for \$385 per channel, for each VC2C unit. So each cable headend will have to install as many VC2C units as that cable system receives and uses satellite delivered cable programming.

"When so many of the basic services collect around 10 cents per subscriber per month, they are simply not able to



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Marketing and Sales

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800-438-3331 704-324-2200 TELEX: 802-166

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As the scrambling supplier to Home Box Office and Showtime/The Movie Channel, M/A-COM is responsible for the manufacturing, distribution and sale of consumer descramblers. We will make consumer descramblers available to you for sale to current owners of home TVROs. We believe this is a unique business opportunity for every cable operator. Each home with a TVRO that wishes to receive the scrambled programming of any service will need a descrambler.

As you are no doubt aware, there are close to a million homes equipped with earth stations. This year, another 500,000 to 750,000 home TVRO systems are expected to be sold.

The M/A-COM descrambler, known as The VideoCipher, is a stand-alone unit that can be connected to an existing receiver. These units will be available from M/A-COM for \$325. If, in your franchised area, you elect to utilize a local dealer for distribution, the suggested dealer price is \$360. They will carry a suggested retail price of \$395. The descramblers can be ordered from M/A-COM and will be available for delivery later this year.

M/A-COM will make descrambling units available to the consumer market through cable operators, TVRO distributors and dealers. We have the responsibility for establishing nationwide hardware distribution channels to make this equipment widely available to potential subscribers. Consistent with this, we encourage you to become involved in the distribution and sale of descrambling equipment. Your M/A-COM representative can fill you in on details. Please don't hesitate to contact us if there is any way that we can be of help in answering your questions. We look forward to working with you and providing the assistance you need in expanding your subscriber base through direct-to-home program distribution.

Sincerely,

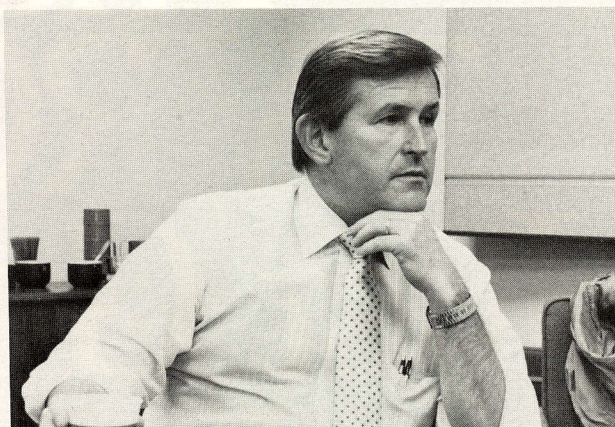
M/A-COM CABLE HOME GROUP

Frank M. Drendel
Frank M. Drendel
President

FMD/

CommiScope Cable Television Coaxials • VideoCipher™ Scrambler/Descrambler
Network Coaxials • Pockle Satellite Antenna Systems • Addressable Converters

M/A-Com To Cable Operators/ This marketing department letter to cable television system operators spells out willingness of M/A-Com 'Cable Home Group' to bring cable affiliates into the marketing scenario for home style descramblers.



afford the cost of providing descramblers to all of their cable affiliates. With this economic boost or assistance program funded by the cable operator, the whole project becomes far more feasible."

WHAT About The Networks?

There are four general families of programming on satellite at the present time. We have premium or pay-movie channels which collect an average of \$4 per cable home from their cable-affiliates. We have the basic services **such as** ESPN, WTBS, WGN and The Weather Channel who average around 10 cents per cable affiliate home per month. And we have the ad-hoc programming groups who collect no money from cable, and may not in fact even be intended for cable use (such as PBS). Finally we have the network services.

Our '1985 TVRO Profile' study, discussed in **CSD/2** for **May 15th** and **CSD** for **June 1st**, revealed that nearly one-third of all TVRO homes tune in at least some 'direct network' (ABC, CBS, NBC) programming each week via satellite. There has been talk, by the networks, about scrambling for as long as networks have utilized satellites for inter-connection. And NBC, by moving its feeds to Ku band, has accomplished a 'form of scrambling' since Ku band reception equipment is not universally available. But what about ABC and CBS? Can Bunker shed any light on their plans?

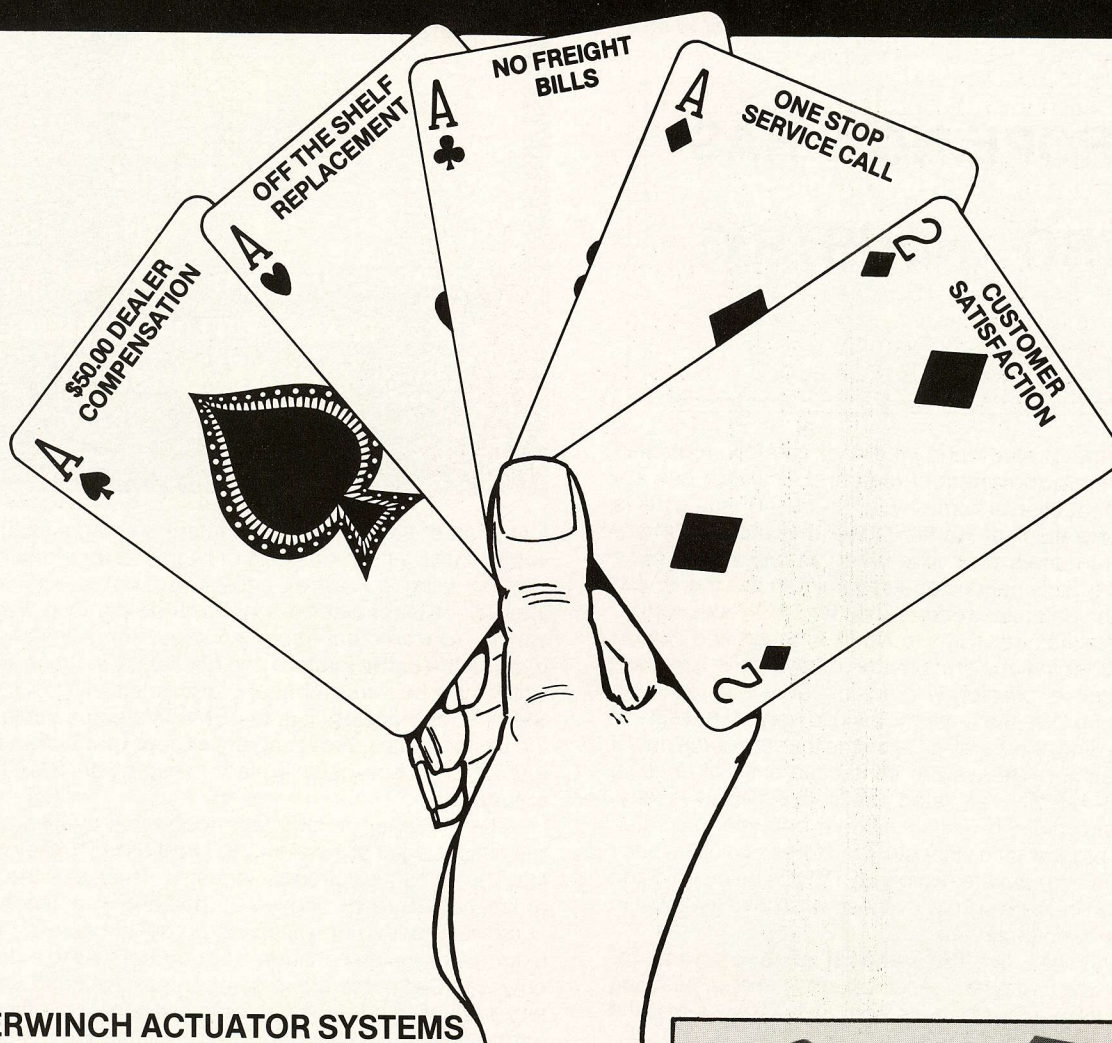
"We have had extensive discussions with both **ABC and CBS about scrambling**. CBS is in fact announcing, probably before this is in print, that they have chosen the original M/A-Com VC-1 scrambling package for their '**back-hauls**'. This will mean that when there is a CBS sports program being fed from a stadium in Houston **back to New York** where it will be 'polished' for network feeding, that **backhaul feed** will be scrambled using the original VC-1 'digital scrambling' technique.

"Now, will CBS (or ABC) scramble their 'main feed', the one(s) which the (TVRO) home owner is now receiving? To the best of my knowledge, there has been no decision in this area yet."

So is network scrambling coming? Yes, in the limited (CBS) area described by Bunker. Will '**regular network**' feeds scramble? **Not in the defineable future.**

In our July 15th edition of **CSD/2**, we will complete this interview with M/A-Com's Jim Bunker and in that segment we will explore the question of 'industry economics' and then look into the competitive nature of an American firm, such as M/A-Com, going head-to-head with off-shore suppliers who operate with some form of 'government subsidy' that allows them to bring products to market at prices below what American firms can match.

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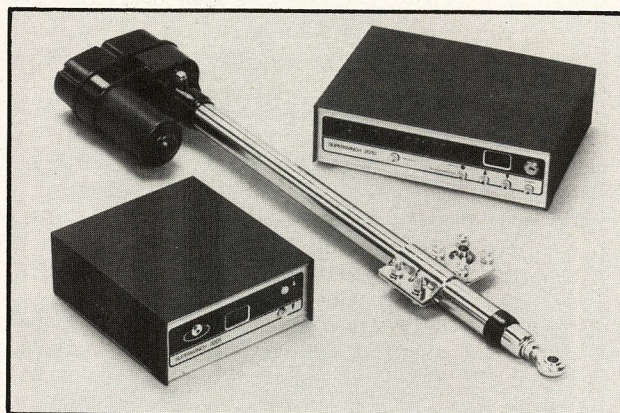
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EUROPE NOW HAS TVRO 'INDUSTRY'

After months of study and weeks of carefully controlled 'press leaks' the government of Margaret Thatcher has approved the introduction of home TVRO in Great Britain. **This is the first 'legalization' of home TVRO in Europe** and the announcement comes at a time when European Ku band service players badly needed an economic 'shot in the arm' to avoid losing the potential world-market for TVRO electronics, and sub-assemblies, to OEMs in North America and Japan.

Virtually all limitations are 'off' and other than a simplistic registration license (possibly with an annual license fee in the vicinity of \$13.00 US), there was nothing to prevent retailers of TVRO from selling and installing systems the very same day of the announcement. There were immediate cries of anguish from Britain's heavily regulated cable television industry, some concerns voiced by Britain's under-one-year old satellite-delivered programming industry, and forecasts of as many as 30,000 homes or private (Ku band) TVROs being sold and installed in the UK the first year by those who have the most to gain from the announcement.

However, **it was not the removal of restrictions for home TVRO** which drew the most response; the same ruling also lifted virtually all restrictions from SMATV systems and **THAT did draw some attention.**

England is a nation of 'cottage communities' or 'estates' where what Americans generously label 'housing developments' are in fact miniature self-contained communities in the UK. 'Estate developments' abound by the tens of thousands. Within an 'estate' there may be 25 or 250 or 5,000 individual dwelling units, often multiple family residences spread through the countryside as a single, often self governing community. Such estates are especially attractive for SMATV systems since they are by nature quite inward looking at their own self-identities. One perhaps optimistic forecast, immediately after the new regulations were announced, suggested that at the end of the first year, there would be no fewer than 1,000 SMATV systems in operation serving around 100,000 residential units.

WHO Benefits?

Cable, introduced with considerable fanfare in the fall of 1983, has failed to materialize. The federal government has been 'stingy' in granting franchises for cable and costs have escalated because of a strong requirement for British hardware content and a pre-occupation to design using something called the 'star-switched system.' Costs per mile of cable, in the UK, are running 3 to 30 times that of equivalent cable runs within the United States. That has put a damper on cable really developing as many had hoped and there has been concern

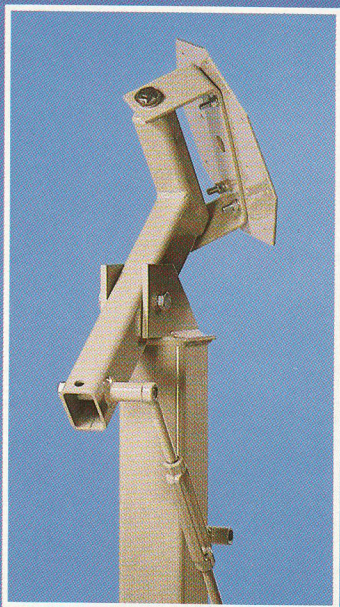


that short of the federal government pouring subsidy money into a massive national cable network (as the French government is doing in France), cable might not make it in the UK after all; **at least not on a national level.** One way around cable's (government-imposed, regulatory) limitations is to **bypass the cable system** and go directly to those living units which can be wired cheaply, and relatively quickly, **using SMATV techniques.** It is the SMATV versus cable battle of the United States all over again, **except that in this instance** there is virtually no cable in place to begin with. **SMATV will be a winner.**

The Thatcher government hopes that by lifting all of the restrictions against private TVRO and SMATV, they will stimulate the British electronics industry. They see the eventual arrival of DBS technology in Europe and also see that British microwave television receiving products could be profitably exported onto 'the continent' **if such hardware existed.** The only way that hardware is going to get designed and placed into production is for there to be a 'test bed' or 'proving ground' for the hardware 'at home.' Thus by lifting the restrictions on private and SMATV TVRO within the UK, the green light is 'on' for UK firms with microwave and 'aerial' expertise to put their private investment dollars to work.

At the present time, here is a status report on the British capabilities to service their own, new market:

- 1) **Receivers/** There are two British firms with expertise in the area of producing microwave video receivers which would be priced attractively for home TVRO and SMATV uses. The largest and most established firm is **SATVRN** or Satellite TV Antenna Systems, Ltd. (10 Market Square, Staines, Middlesex; telephone 0784 61234). SATVRN is headed by entrepreneur **Peter Gray** and English TVRO hardware innovator **Steve Birkill** is in charge of equipment design. SATVRN has several receivers, a pair of LNBs and some antennas in their line. They have done limited installations for North Sea (offshore) oil rigs and a handful of private or demonstration systems which were installed as 'tests' prior to the relaxation of the regulations. **Satellite Technology Systems, Limited** (3 Thicket Road, Staple Hill, Bristol BS16 4LW; telephone 0272-573878) is headed by **Michael Stone.** This firm has a line of receivers which it has designed for both domestic and SMATV

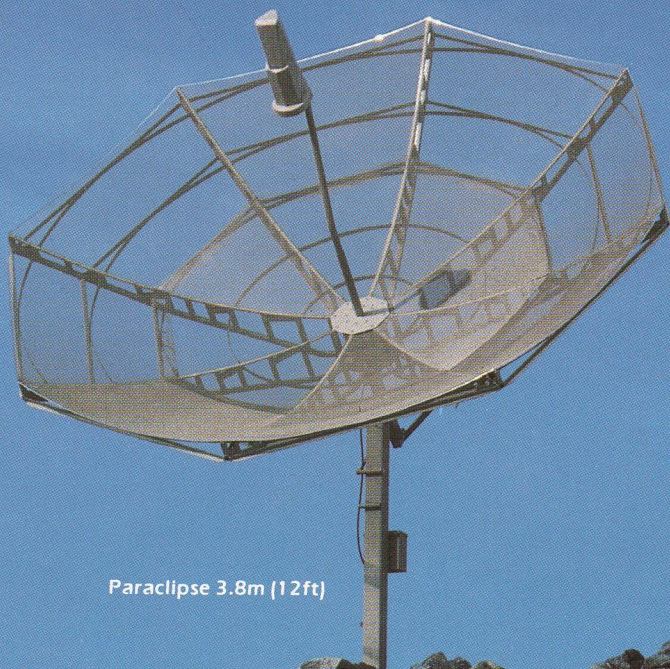


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Our brand new polar "T" configuration means greater strength and an increase in polar tracking precision.

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Paracclipse 2.8m (9ft)

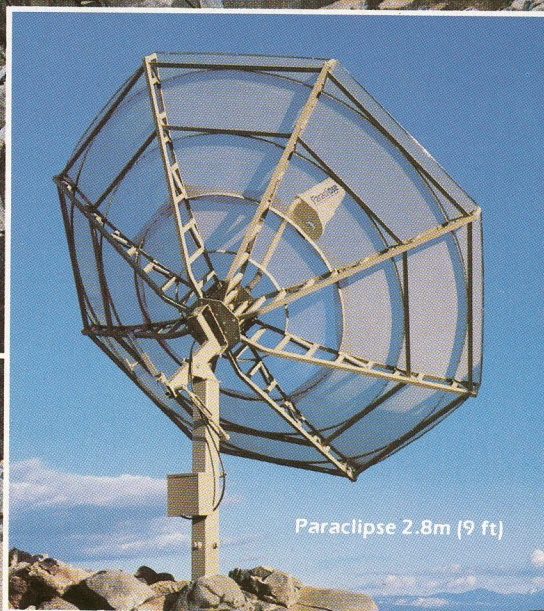
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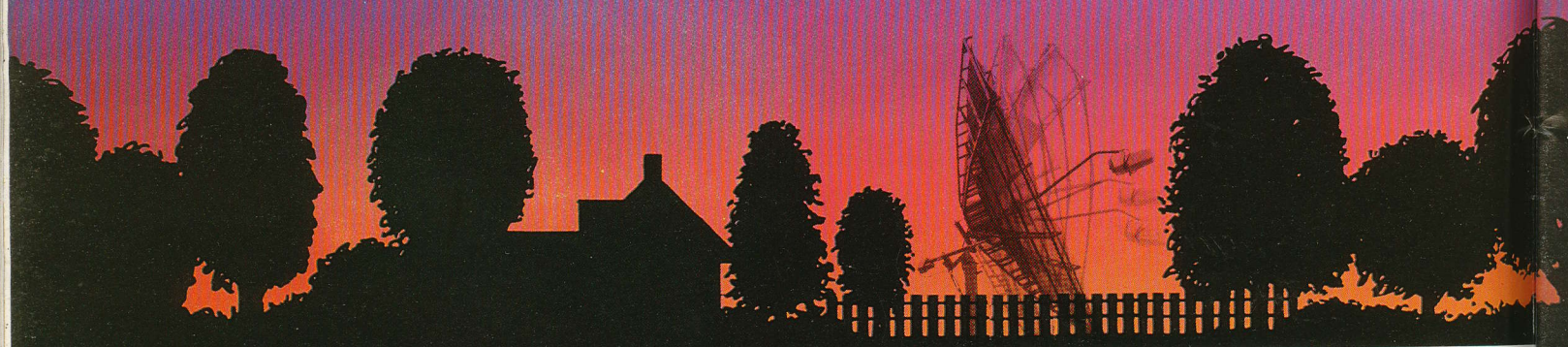


Paracclipse 2.8m (9 ft)

Mark Fator photograph

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Finally, there's a totally integrated home satellite reception system, with perfectly matched components that look great and work beautifully together. And it's from DX, with all the quality features and superior performance you've come to expect from us. Result: the picture-perfect system you've been looking for.

The New DSB-400 Antenna Positioner

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single chip circuitry for higher reliability; fully programmable polarization and skew adjustment on every satellite ...every position; and a nonvolatile 10-year memory so you don't have to leave it turned on or worry about power failure. It has easy-to-use and easy-to-read controls, programmable limits, and a full-function remote control unit with parental-supervision button. Last but not least, it looks great!

The DSB-700 Receiver

It has the DX quality features you've looked for, but for much less than you'd expect to pay. **Block down-conversion**, for multiple-TV hook-up;



picture quality comparable to commercial receivers; and a video clamp/unclamp switch with composite baseband output for descrambler compatibility. And that's not all! It's capable of receiving both 4 GHz and 12 GHz signals and comes with infrared remote control. And guess what. It looks great, too. DX also pro-

vides a full line of accessories to make for easy multiple-TV installation. From every standpoint—quality, performance, price—we've got what you've been looking for.



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Introducing the top-of-the-line line.

No, it's not a misprint. It's a statement of fact.

Because every new receiver in the 1985 Uniden line delivers top-of-the-line performance, regardless of price. It's the kind of performance that's made us the leader in the industry.

Like our UST-5000 for instance. It's the simplest block downconversion unit in our top-of-the-line line, yet it offers your customers all the sophistication of Uniden technology and styling along with features usually found on more expensive receivers.

Like soft-touch controls for easy channel selection, slow/fast channel scan, easy-to-read LED channel display, and skew and audio tune controls. Plus, the most sought-after feature of all: a very affordable price tag.

There's also our UST-6000. An incredibly reliable mid-priced blockdown receiver that offers all the features of the UST-5000 plus convenient handheld wireless remote control and full stereo sound.

Our UST-7000 combines the most sophisticated engineering in the industry with the most advanced convenience features. Like a built-in programmable antenna controller. Easy-to-read LED displays that provide a full range of information at a glance. And a full-function remote control for total 'armchair' operation.

All in all, an incredible array of features, functions and models. All with block downconversion and at competitive prices, making it easy to multiply your profits by selling multi-receiver systems to families with more than one TV.



And we'll be backing our entire top-of-the-line line with the most impressive dealer support package in the entire industry to help you do it.

So contact your local authorized Uniden distributor for more information on our complete line of satellite television systems. Or call toll-free 1-800-582-5360. In Canada call 1-800-663-0296. And start stocking Uniden's top-of-the-line line.

It will do amazing things for your bottom line.

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Win with Uniden in '85.

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EUROPE HAS TVRO/ continued from page 16

operations.

SATVRN and STSL have been in operation for a couple of years. Both have done 'original' design work creating essentially 950-1450 or 950-1700 MHz block IF receivers. SATVRN is the leading firm in the field at the present time, in terms of volume of equipment produced and shipped but neither firm has produced more than a few hundred receivers to date. Both obtained funding, after exhausting the original creator's investment capital, through UK funding sources and both have some amount of 'government-backed' investment dollars at work for them.

SATVRN's **TDM2000** receiver is a (SMATV) commercial grade receiver that tunes the 950-1700 MHz band. We'll see why shortly. Their **TDM-1200** is a lower priced consumer product with a digital clock and digital channel display. The 2000 series unit uses a 5 MHz-step frequency synthesizer with a final IF of 850 MHz. The 850 MHz signal is PLL demodulated with a claimed threshold of 8 dB. The video bandwidth is 32 MHz (others are available) and it is equipped for outboard signal processors such as descramblers (more about the good news there, shortly). The audio is subcarrier tuned like most US receivers and outputs are baseband only.

The 1200 series receiver has a modulated (UHF TV band) output, a 30 MHz IF bandwidth, audio subcarrier of either 6.6 or 6.65 MHz, and an unclamped baseband output for external processors or descramblers. The unit is available for either the 10.95 to 11.45 GHz band (the band where all Intelsat Ku band signals downlink) or the 10.95 to 11.7 GHz band (which adds the ECS-1 and 2 channels missed with the first band covered). SATVRN has a 1.8 meter (6 foot) dish system which it acquires from **Galt Antenna, Limited**, a well known and respected producer of (small) microwave antennas in the UK. The mount for the antenna is NOT polar (it is Azimuth/Elevation).

THORN/EMI is another perhaps better known participant in the marketplace. Their approach, however, has been largely along the lines of traditional cable hardware and averages from 50 to 200% over the cost of hardware currently offered by either SATVRN or STSL. Thorn-EMI has created on paper a 'franchise program' whereby they introduced an SMATV equipment package which they call 'Galaxy.' Their concept is to find suitable firms capable of installing SMATV headends and distribution systems and to franchise those firms to install their (relatively expensive) hardware. What they bring to the picture initially is their considerable expertise and their internal connections with satellite programming sources. Most English marketing people regard the Thorn-EMI approach as "unworkable" and built around "classic monopoly measures." To many, it reminds one of the early-day Scientific-Atlanta approach to cable hardware systems in the US during 1976 and 1977. The difference here, however, is that in that era S-A was just about the 'only player' in the field in the United States and now Thorn-EMI faces stiff competition from both within the UK and from outside.

Which brings us to the import question.

At least one established player in the worldwide TVRO industry is already in place in the UK. **Luxor** has maintained sales office in the London area for many years, importing television and radio products from their plant in Sweden. The Luxor UK facility has been equipped for TVRO reception as a demonstration of their 'technical capabilities' for nearly one year. **Luxor brings to the party** something virtually all of the English firms lack; **solid experience in high volume produc-**

tion of TVRO hardware and a directly transferable education from the North American market. Luxor, if it wishes, **could be** a major player in the early development of the UK marketplace for both home and SMATV systems. But there are some pieces missing.

Recall that the SATVRN and STSL receivers cover the frequency ranges in the BDC area of from approximately 950 MHz to approximately 1700/1750 MHz. There is a reason for this, somewhat unique to Europe.

Keep in mind that what we presently have in Europe is **not**

LATEST EUROPEAN Ku Band Service Channels

How much television is available, in Europe, and in the 'UK,' with modest sized (1.2 meter) dishes and appropriate 11 (12) GHz electronics? Here is a current listing of what is available and its operating status.

Satellite	Channel	Service 'ID'	Freq. (MHz)	Audio	Language
ECS-1	1X	RAI Uno	11,005	6.7 MHz	Italian
	2X	SAT 3	11,057	PCM	German (9-01-85)
	3X	Olympus	11,175	6.65	Mixed
	4X	Catalan News	11,470	6.65	Catalan
		EBNET	11,470	6.65	(Religion)
		USIA Agency	11,470	6.65	English
		TV5	11,470	6.65	French
	6X	SkyChannel	11,650	6.65	English
	7Y	TeleClub	10,987	6.5	German
	8Y	ATN	11,158	6.65	English/Dutch
		WPN	11,158	6.65	English (News)
	10Y	SAT 1	11,507		German
	12Y	MusicBox	11,674	6.65	English
	2X	Children's Premier	11,015	6.60	English (Movies)
Intelsat-V	3X	Screen Sport	11,135	6.65	English
	4X	T.E.N.	11,175	6.60	English (Movies)

Note: Cable News Network scheduled to be on Intelsat V, 9-15-85.

Ghorizont	10 RHC	Programma 1	11,512	7.0	Russian
ECS-2	1X	EBU Reserve	10,975	SIS	Varies
	3X	EBU Primary	11,142	SIS	Varies
	6X	Norway	11,676	C-MAC Encoding	
	7Y	EBU Reserve	11,009	SIS	Varies
	9Y	EBU Primary	11,176	SIS	Varies
	10Y	EBU Lease	11,500		

Notes: PCM is pulse-code modulation. French TV5 dropped 'its' scrambled format in June after the report here was prepared; thus **none** of the ECS-1 service channels are now scrambled. 'X' indicates horizontal polarization while 'Y' indicates vertical polarization; RHC is right hand circular. A pair of stereo radio channels are transmitted at 7.02/7.20 and 7.38/7.56 MHz on ECS-1 transponder 9Y (ATN). All data courtesy of **Michael J. Stone**, Satellite Technology Systems Limited, Bristol, UK.

DBS; it is Ku band **fixed point-to-point satellite communications**. Thus we are not using the allocated (but largely not in use save the French Telecom-1 bird) DBS 'region' channels **yet**. What is in use are frequencies **below the DBS band**, stretching from 10.95 to 11.7 GHz. This is a frequency span of 750 MHz rather than the standard 500 MHz span we find between 3.7 and 4.2 GHz for North American 'CBD' service. This extra-wide bandwidth requires an extra-wide BDC IF and SATVRN and others have elected to boost the bandwidth upwards above the nominal 1450 MHz cut off to



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1700 MHz or so. At the present time the Intelsat feeds in use, feeding programming into the UK suitable for reception on 1.2 to 1.8 meter antennas, are in the lower portion of this frequency band. Some of the ECS-1 and 2 feeds are in the middle and upper portions of the 700 MHz wide 'band.' Still additional channels, **to come** when the real DBS gets off the ground, will be even higher in the 12.2 to 12.7 GHz band. All of this makes designing both the receiver and the BDC units quite complicated. It even presents some problems to people designing feeds.

To satisfy this problem you have several options available. For SMATV operations where dedicated receivers will stay on dedicated transponders, the receivers (and their local oscillators) can be 'tweaked' for just the channels or segment of interest. **A true TVRO system**, however, **would need to access the full** (present) **700 MHz band** because TVRO users will want reception from both Intelsat's Ku band services and the ECS-1 and 2 services. The SATVRN approach was to simply broaden out the IF and the front end so that this is possible. Other approaches are to use switchable 'oscillator elements' to convert either 10.95 to 11.45 or 11.2 to 11.7 GHz down to the 500 MHz wide BDC IF which extends from 950 to 1450, as it does for equipment sold in North America.

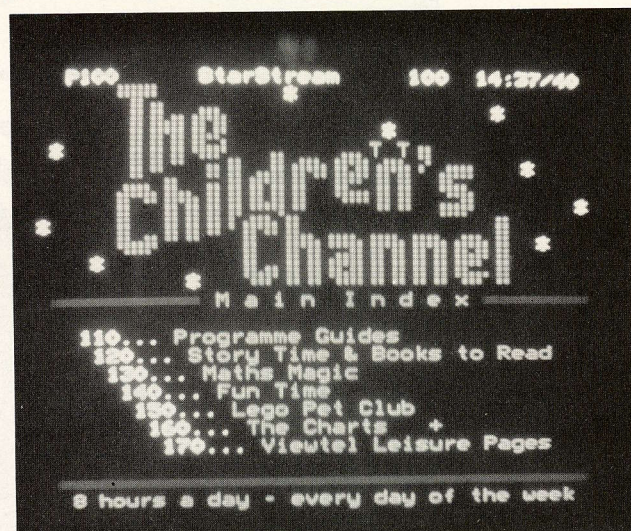
Enter the Japanese.

Aware of this design challenge, the latest Japanese receivers coming from firms such as **USS/Maspro** have been designed following the approaches of SATVRN; **an extra-wide BDC IF**, covering the frequency range of 950 to 1750 MHz (the USS/Maspro **SRA-500** receiver; reviewed in August along with other recent top-of-the-line Japanese receivers). There is a significant **price advantage**, at the moment, in favor of receivers such as the SRA-500 and this will be a suitable challenge to both the English equipment builders as well as the folks at Luxor.

WHAT Is Missing

If the receiver options and pricing are present, there are other shortages which aggressive North American or Japanese suppliers may be addressing over the next few months.

- 1) **Antennas** / In spite of the high quality antennas from firms such as Galt Antenna, there is a considerable present-day shortage of **mass produced antenna 'capacity'** in the UK. Antenna suppliers in **Spain** are expected to fill the **near-term** gap while English antenna production houses come up to speed. **Germany** is also likely to turn into a major producer of 3 to 10 foot Ku band dish systems but not within the next 12 months.
- 2) **Feeds** / There are problems between linear and circular transmissions which will not sort out easily. Luxor is working on a new feed which it hopes to introduce around the 1st of September. For the moment, **feed shortages** for systems capable of receiving transmissions from both Intelsat and ECS (1 and 2) could be a problem.
- 3) **Mounts** / Polar mounts are virtually unknown in the UK and tracking mechanisms are largely bootlegged in from the United States. None of this is insurmountable but for the near term there are **greater problems** associated with the fact that an 11 GHz tracking antenna needs nearly three times the 'tracking accuracy' as a 4 GHz counterpart. Mounts designed in the United States simply will not hack it for the higher frequency band and motor drives, bootlegged in or not, are also not capable of stopping precisely on the tighter-spec'd



LACKING AN ORBIT guide, creative Europeans have put together a 'Teletext' service transmitted via satellite which outlines the day's viewing fare on most of the major programming sources.

11/12 GHz birds. There will be plenty of midnight oil burned resolving this problem and the UK will be the first presented with the challenge of creating a **12-GHz-accurate polar mount mechanism** with suitable 'definition' that it can come to rest on a 'dot in the sky' that is effectively 'three times smaller' than our 4 GHz 'dots' are in CBD service.

- 4) **LNBS** / They know how to make them in the UK, but there are no volume producers currently in operation. Prices are high and are likely to stay high (and supply short) **until** the Japanese bring their boats into the harbor loaded with the first 10.95 to 11.7 GHz capable BDC units.

There are other problems. British homes and estates are typically surrounded with tall trees; something the British take great pride in. Ku band signals don't penetrate such vegetation and finding suitable clear-line-of-sight to the Intelsat and ECS birds will be difficult for a significant percentage of the

private homes. And you don't cut down a tree in England without a special permit in most quarters!

England is a country with exceedingly strong 'trade unions' and it remains to be sorted out just who will sell and install these 30,000 private terminals and 1,000 SMATV systems that first year. Already, two groups are vying for the 'right' to install TVRO antennas and one, calling itself **Aerial Industries**, is lobbying hard for that 'concession.'

SATVRN's sales manager **Mike Aarons** believes that the traditional 1.2 meter dish can be installed with the equivalent of 'one-man-day,' or two men working together for a half day. This would follow a visit by a salesman doing an 'eyeball site survey,' and a follow-up visit by a 'real' site survey crew. The larger 1.8 meter dish, which to American installers is a toy-ful 6 feet in size, is the equivalent of a 'two-man-day' job according to Aarons. Remember, this is with a fixed Az/El mount (no tracking). Aarons fears that the industry will attract the English equivalent of US 'garage operators' which he characterizes as arriving at a job-site with a Cortina van and a set of ladders ready to 'do battle' with the fearful TVRO dish.

There are in fact virtually no retail outlets handling TVRO hardware and therefore no retail experience in this area. One, **Megasat, Limited** out of London, has struggled through several years of demonstrating 4 GHz Gorizont systems and has earned the right to be 'first into the market' with 'real TVRO systems.' Other than Megasat and others that can be counted on one hand, **there is no retailing nor installation experience with TVRO in the UK** and many believe that it will take at least six months for that to sort out. It is likely, given the status of these elements in the business, and the added fact that several key component parts of the typical system are not available in anything approaching volume, that the first year's actual number of installations will fall far short of even the 30,000/1,000 forecast. One suggests **"It will be a spring of 1986 market, in reality;** we are going to need seven to eight months to muster our resources and our personnel. When the next English winter wanes, that's when we will be ready for serious business."

PROGRAMMING Available

All of this 'free market' attitude would be useless were it not for a fortunate happenstance in the programming availability arena.

Just one year ago, it was assumed by most that virtually all of the ECS-1 and eventual ECS-2 programming, shipped around Europe for use by the cable television systems that are in operation largely outside of the UK, **would be scrambled.** It was also assumed that if any programming were to start up on the Intelsat spotbeam feeds that place 48 dBw signal contours into the UK, that these channels also would be scrambled.

And in fact, England's most famous satellite television export, **'Sky Channel'**, has been scrambled using the Oak-Racal (Orion) system from the very first day it began transmissions nearly three years ago. The bottom line first; for all practical purposes only the French TV5 service is now scrambled with even **Sky Channel dropping its Oak-Racal scrambling system** at almost precisely the same time as the UK decided to deregulate private TVROs. A table here shows the sort of services available, as of early June, using the Intelsat V (F-4) bird and the ECS-1 bird. With ECS-2 and 3 expanding the programming service available, and the possibility that an additional Intelsat V bird will add additional spot beams into the UK within the year, there is actually more unscrambled television 'choice' available to private or SMATV systems in the UK than the US had as recently as 1982.

transmission parameters for FILMNET-ATN	
satellite	ECS F1
orbital longitude	13 deg. E
channel	9
polarisation	linear, vertical(y)
carrier frequency	11.140333
R.F. bandwidth	30 MHz (temporary)
deviation	19 MHz pp (temp.)
energy dispersal	up to 2MHz peak to peak deviation
waveform	triangular
pre-emphasis	CCIR rec. 405-1

FILMNET-ATN	
video characteristics	
system	PAL 625/50
polarity	sync negative
bandwidth	5 MHz
encryption	none
audio characteristics	
system	FM subcarrier
frequency	6.6 MHz
bandwidth	15 kHz
FM deviation	150 kHz pp
pre-emphasis	CCITT J17
encryption	none

PROMOTING their own program service/ Dutch 'Filmnet-ATN' conveniently provides technical parameters of transmission (top) and where to call for service during start-up hours daily. (Photos courtesy Michael Stone of UK receiver OEM Satellite Technology Systems Limited.)

Equipment sellers to date have been exceedingly cautious about 'advertising' the wide program availability actually available. They have taken this 'yes-but' attitude largely in respect that the laws, until recently changed, clearly were not in favor of 'intercepting these program channels' on even a 'private' basis. Publications were exceedingly careful not to 'tell the masses' about the availability of service or that a 'chap' could stick a 1.2 metre aerial on his roof and 'tune-in' more than a dozen video services from space. All of that changes, quickly, with the deregulation of TVRO.

To the present availability, there is the **September 15th** debut of the Ted Turner **CNN** product also on the Intelsat V satellite. This will be the **first American service available** and because of its news-nature and its 24 hour operation, retailers and retailers-to-be expect a very large demand for private systems using this service from the USA. Those who would sell SMATV systems, as well, expect the CNN service

to be exceedingly popular with SMATV customers. As we reported here last month, Turner expects to sell his service to the commercial motel/hotel industry for the equivalent of 30 cents US **per day** but no rates have been established for full-time service into SMATV connected homes to date. They are likely to be about half the rate of the motel/hotel systems.

FALL Out Considerable

The ripples from the UK decision, real and imagined, are likely to be considerable. First of all, you should not lose sight of why it happened. Approvals of this nature occur in Europe because someplace, somebody has decided that a nation's **"trade balance"** with **other European nations** can somehow be improved by such an action. In this case, the UK government clearly believes that DBS and microwave delivered television is inevitable in Europe and they would like British high tech firms to create a sizeable amount of British antenna and electronic hardware product which can be exported from the UK to meet this demand. A country in Europe, much more so than the US, rises and falls nationally based upon its **international** trade. British trade with **other European countries** has continued to plummet and the electronics industry has been especially hard hit. They hope this will help

and they believe that giving their home technologists a year or two of advance-training before the rest of Europe 'wises up' may be an advantage to British trade.

The Germans are expected to 'wise up' fastest and to approve some form of private home TVRO as well. The French are not considered to be players in this game, yet, because to open up their citizens to 'unregulated home terminal reception' would run contrary to their inward-looking attempts to wire the entire nation with a government sponsored fiber optic cable network that will be state run.

After much debate over the matter of whether the 10.95 to 11.7 GHz band was 'legal to use for home delivery,' the British decision seems to be more of a 'who-cares-about-that' attitude than a formal confrontation with the legal questions raised. It may serve as an example which other European nations will also adopt if they also see benefits to their own economies by somehow joining the space video race.

With one decision, the Thatcher government has created an entirely new industry in the UK and perhaps created a precedent which other European nations will find difficult to ignore. One thing is certain; European television is never going to be the same again.

HIGH VOLTAGE LINE INTERFERENCE

INTRODUCTION

There have been a number of inquiries about possible influence on satellite TV reception by transmission lines, particularly **765 kV** lines. Most installers of satellite TV systems believe that power lines are not a problem. To determine receiver response to power system obstructions, a "dish" (parabolic microwave antenna) was positioned to "look

High voltage, 'high tension' power lines criss-cross rural and sub-urban America at regular intervals. Power stations and sub-stations pop up where people need to be served with electricity. Are these 'super-nova' power concentrations capable of causing degradation or wipe-out for 4 GHz satellite reception? **We wondered** and a special research project, commissioned by American Electric Power, explored the 'potential' for interference to 'CBD' reception. Our gratitude, on behalf of an entire industry, to the trio of researchers who tackled this project and who report on their results here.

by

E.J. Koegler, W.C. Pokorny, W.R. Roy
AEP/ASEA UHV Research Project
American Electric Power Service Corp
24707 Quinn Road
North Liberty, In. 46554

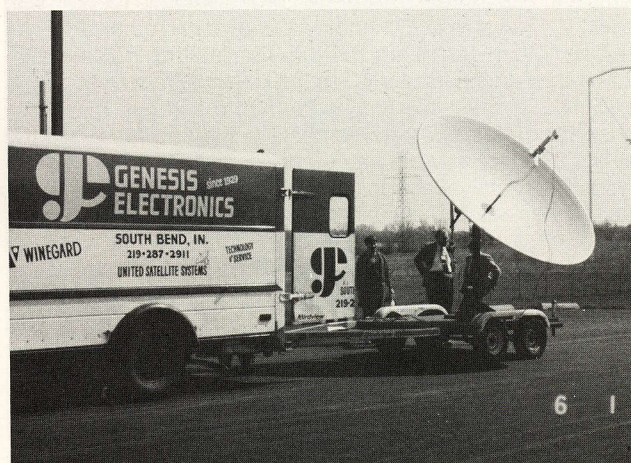


PHOTO ONE/ Physical installation, Site #1

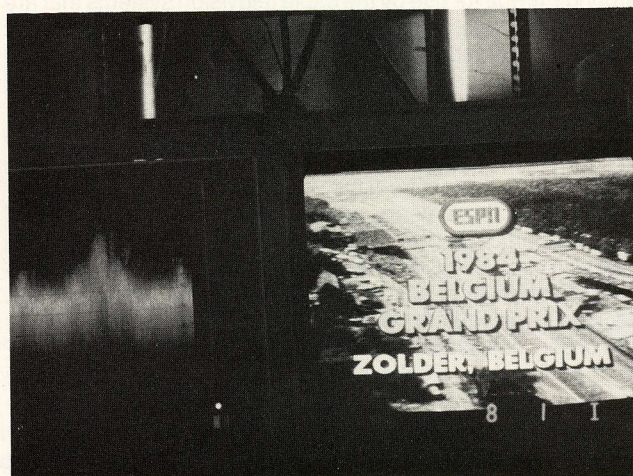
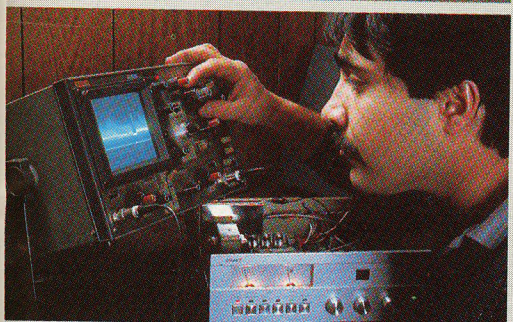
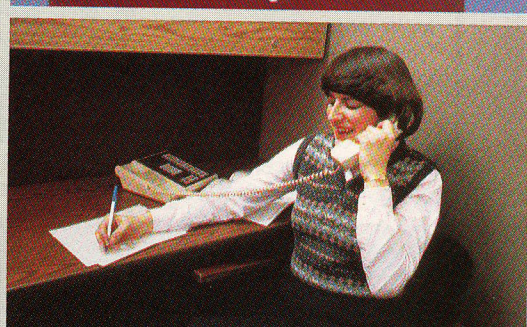
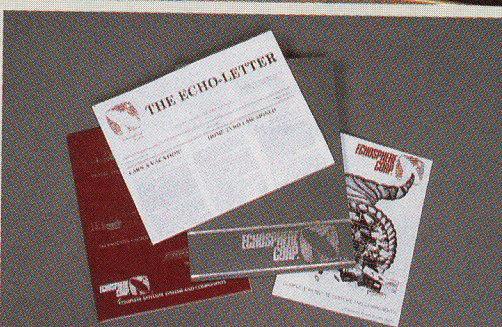
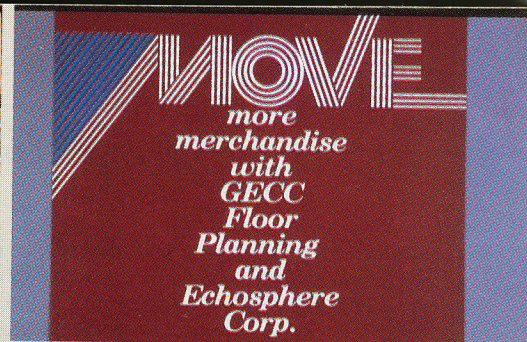


PHOTO TWO/ TV monitor and spectrum analyzer display, Site #1



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through" a 765 kV tower, line and bus, through an arcing 345 kV disconnect, and through an ultra-high voltage bus energized at $2050/\sqrt{3}$ kV. Picture quality was compared to reception at a location with an unobstructed down-link signal. The tests were made at the Indiana & Michigan Electric Co. Dumont Station and at the AEP-ASEA UHV Research Station near North Liberty, Indiana.

DETAILS OF TESTS

The Genesis Electronics Co., South Bend, In., a supplier of satellite TV receiving systems, was contracted to provide a portable system that could be readily moved to select loca-

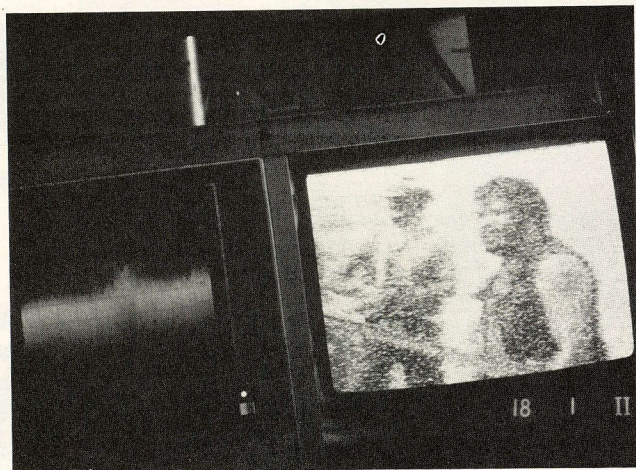


PHOTO FOUR/ TV monitor and spectrum analyzer, Site #2



PHOTO THREE/ Physical installation, Site #2

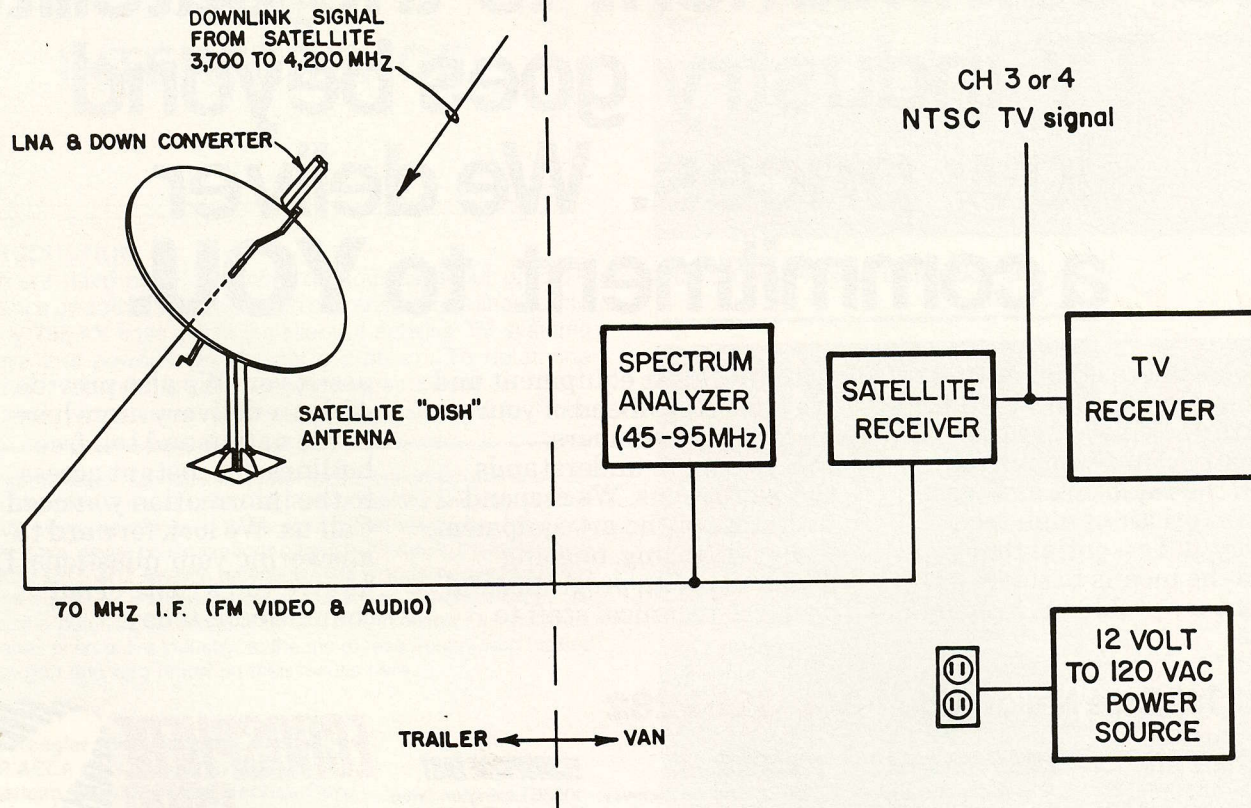


FIGURE ONE/ Diagram of test set up (courtesy AEP/AESA)



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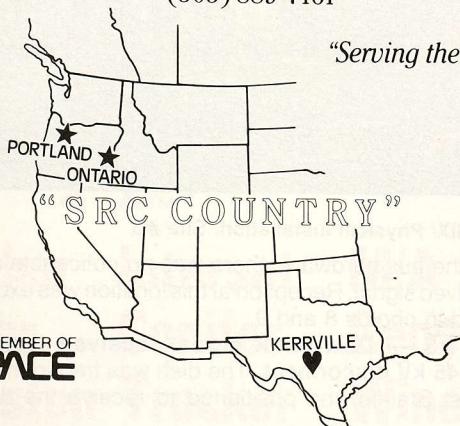
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tions for the test program. The equipment included a complete 9½' dish antenna (Horizon), a satellite receiver (Luxor), a spectrum analyzer (Hewlett-Packard) and a TV receiver (Panasonic).

The dish was mounted on a flatbed trailer, while the receiving and monitoring equipment was housed in a van-type truck which included a built-in AC power supply, **see Figure 1.**

The output of the low noise amplifier (LNA) and the down converter (mounted on the dish antenna) with an output frequency of about 70 MHz, was brought via coax cable into the van and to the satellite receiver. The signal was also displayed on a spectrum analyzer (not required in a normal installation) to check for interference and to aid in tuning. The receiver tunes the down converter to select the proper channel, and converts the 70 MHz FM I.F. signal to a standard NTSC TV signal on VHF channel 3 or 4.

The program was designed so that down-link signals would be received at:

- | | |
|----------------|--|
| Site #1 | With an unobstructed view of the satellites (for the best case) |
| Site #2 | Through a 765 kV tower |
| Site #3 | Through a 765 kV line |
| Site #4 | Through a 765 kV bus |
| Site #5 | Through an arching 345 kV disconnect |
| Site #6 | Through an ultra-high voltage (UHV) bus |

Reception was compared between an ordinary 120 VAC source and an AC source from the inverter built into the van. Reception was identical with either source. The weather at the beginning of the tests was fair, but rain was encountered during tests at sites 5 and 6.

RESULTS

Site #1 — Unobstructed down-link signal. The unit was located in the UHV Test Station parking lot (photo 1). An unobstructed view of the southern sky was available. Reception was observed on several channels from the Satcom F3 satellite and found to be excellent. The TV monitor and a spectrum analyzer are shown in photo 2.

Site #2 — Down-link signal obstructed by a 765 kV tower. The dish was positioned to "look" through a very dense and massive 765 kV deadend tower adjacent to Indiana & Michigan Electric Company's Dumont Station. This dish was located 150' from the tower base. **Reception from Satcom F3 was poor**, as shown in **photo 4.** Cause of the poor reception was judged to be from the **physical obstruction** of the tower; there was no indication of electrical interference. When the dish was rotated toward another satellite, resulting in only partial obstruction by the tower, there was significant improvement in the reception.

Site #3 — Down-link signal obstructed by a 765 kV line. Moving the dish a few meters eastward from site #2 resulted in looking through the 765 kV line (photo 6). Reception at this location was excellent (photo 5). At this location the 60 Hz electric field intensity (resulting from the 765 kV line) was **1 kV/m.** Tires on the van and the flatbed trailer were sufficiently conductive so that trailer-to-ground-potential was only **4 volts.**

Site #4 — Down-link signal obstructed by the Dumont Station 765 kV bus. To complete the 765 kV tests, the dish was relocated to look through the Dumont Station 765 kV bus (**photo 7**). Although there is usually some corona activity

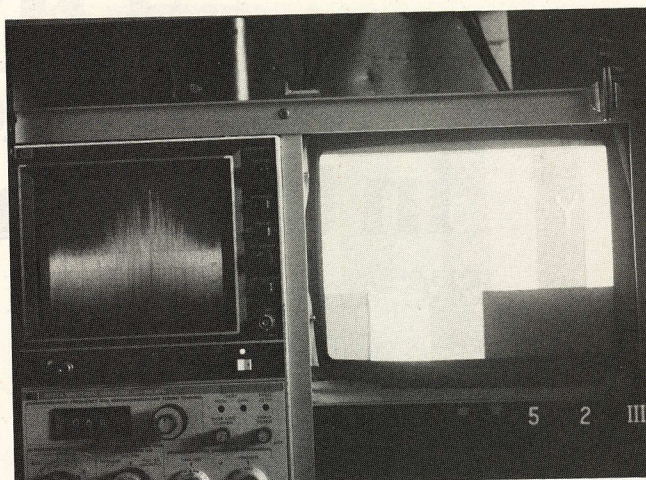


PHOTO FIVE/ TV monitor and spectrum analyzer, Site #3

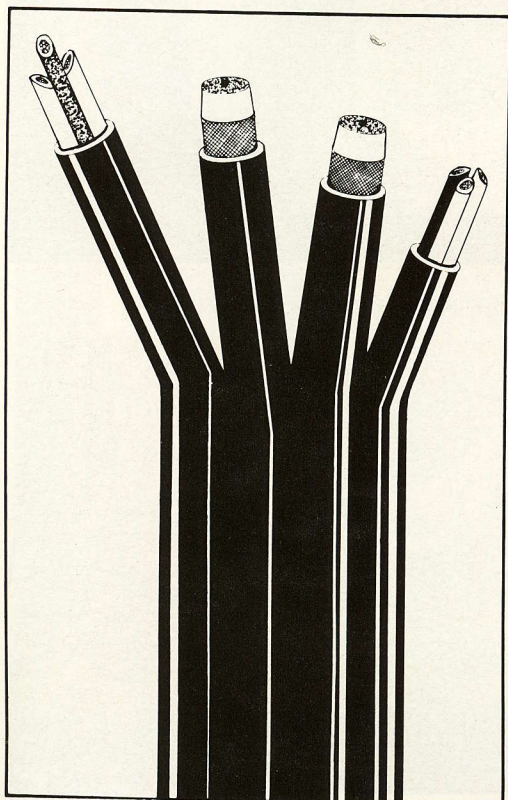


PHOTO SIX/ Physical installation, Site #3

around the bus hardware, there was no noticeable effect on the received signal. Reception at this location was excellent as indicated in photos 8 and 9.

Site #5 — Down-link signal received through an arching 345 kV disconnect. The dish was transported to the UHV Test Station and positioned to receive the down-link

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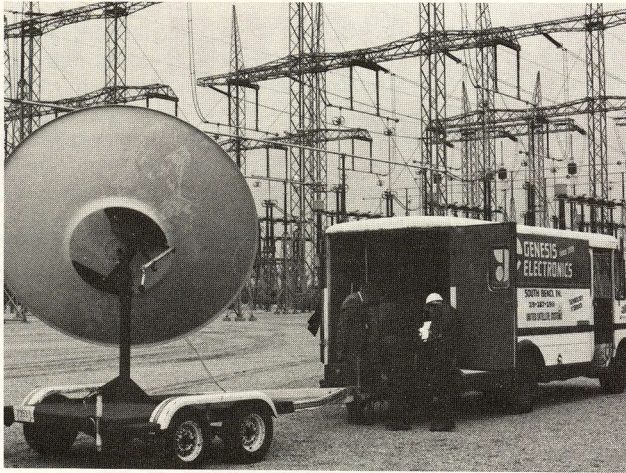


PHOTO SEVEN/ Physical installation, Site #4

signal through a 345 kV disconnect (**photo 10**). The disconnect was operated (causing an arc) several times while TV reception was observed. The arc was maintained for a few seconds during each operation of the switch. It caused distorted reception. The period of distortion was too short for the

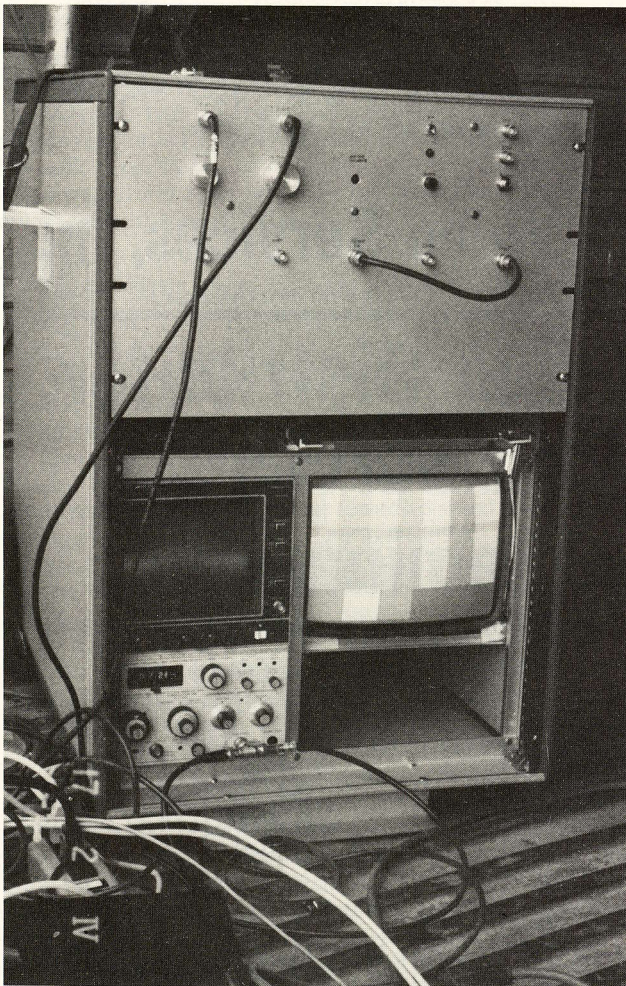


PHOTO EIGHT/ TV monitor and spectrum analyzer, Site #4

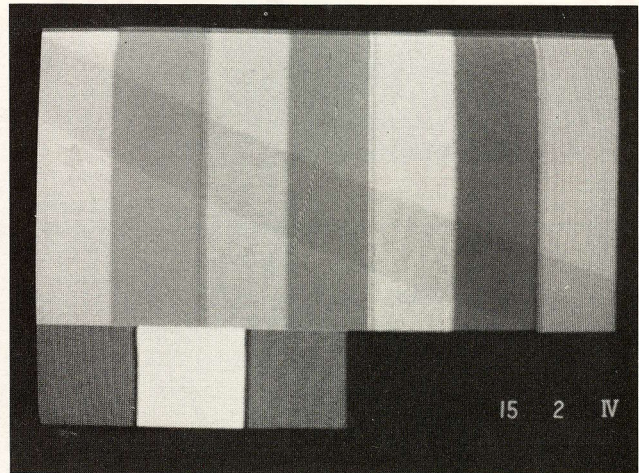


PHOTO NINE/ Close-up TV monitor display, Site #4

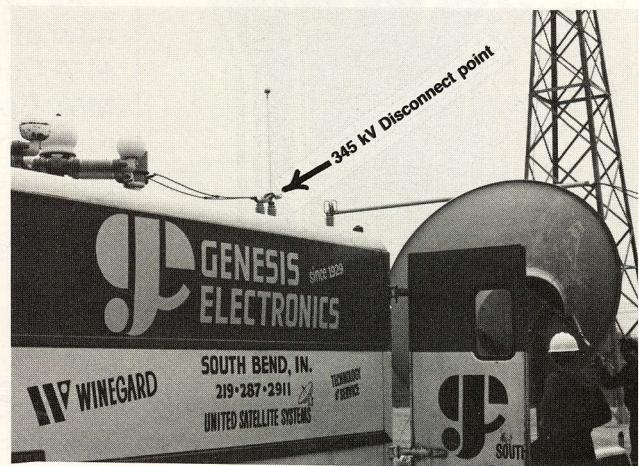


PHOTO TEN/ Physical installation, Site #5

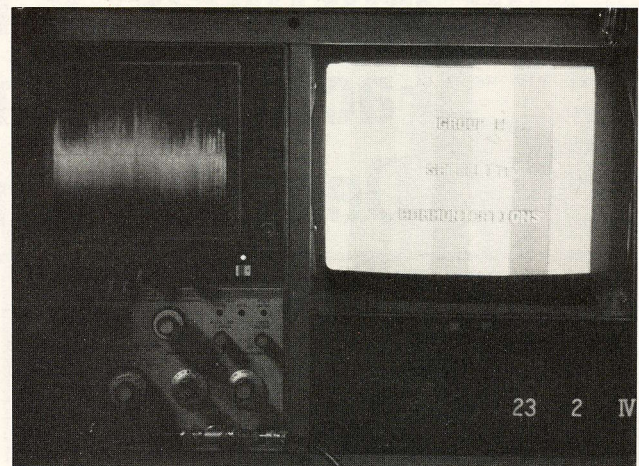


PHOTO ELEVEN/ TV monitor and spectrum analyzer, Site #5

spectrum analyzer (extraneous signals) and a slight tearing of the TV picture on the monitor. With the instrumentation available, it was not possible to determine whether the arc was producing noise at the 4 GHz level or whether the input circuitry was overloaded at a lower frequency. Subsequent tests



PHOTO TWELVE/ AEP-ASEA UHV Test Station (Site #6)

with other equipment showed that the arcing disconnect produces noise at least up to 1 GHz (limit of the test instrument). Thus the energy in the arc may have introduced 4 GHz noise throughout the receiver system including the monitor.

Site #6 — Down-link signal obstructed by the UHV bus. This test was made during light rain which caused considerable corona activity on the UHV bus (energized at 2050/ $\sqrt{3}$ kV). **Photo 12** shows the position of the dish relative to the UHV Test Station bus. Audible noise from the bus was quite noticeable. This condition did not effect the satellite signal; the reception was excellent.



PHOTO THIRTEEN/ TV monitor and spectrum analyzer, Site #6

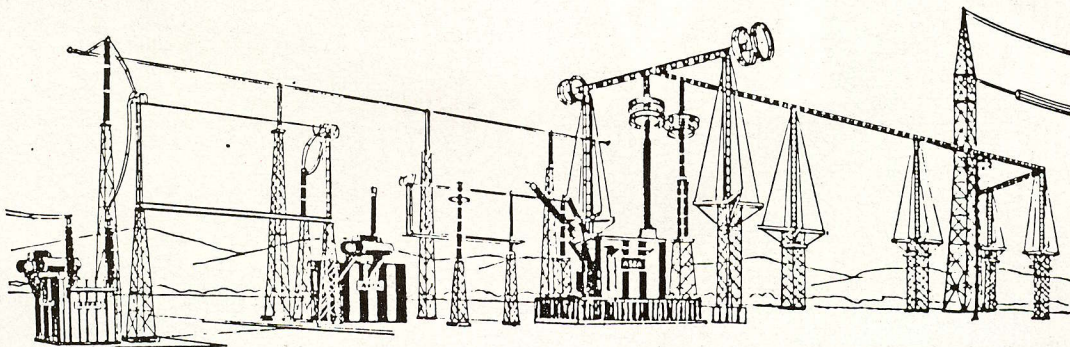
DISCUSSION

Satellite TV reception was evaluated at six sites, five of which represented abnormally severe conditions. Excellent reception, equal to the unobstructed site, was achieved at three of the five locations, i.e. looking through an energized 765 kV line, 765 kV bus, and a UHV bus. The two sites which resulted in poor reception involved the physical **obstruction** of a very massive and unrealistic situation and would not be chosen for a location of an antenna in a practical installation. Typical practice in selecting a location for the dish antenna avoids obstructions in the path of the down-link signal.

This study is part of an ongoing AEP program on high frequency interference investigations. Tests described in this report showed that excellent reception can be expected even though a high voltage line or bus partially obstructs the down-link signal path. On this basis nearby transmission lines or other high voltage facilities **are not expected** to effect reception of satellite TV.

SUMMARY

A test program was conducted by the staff of the AEP-ASEA UHV Test Station to determine if satellite TV reception is effected by nearby high voltage transmission lines and stations. A portable satellite TV receiving system was positioned so that the down-link signal was partially obstructed by a high voltage transmission line, tower, and bus. In these exceptionally severe locations, excellent TV reception was experienced. On this basis, there should not be interference to satellite TV reception from nearby transmission lines or stations.





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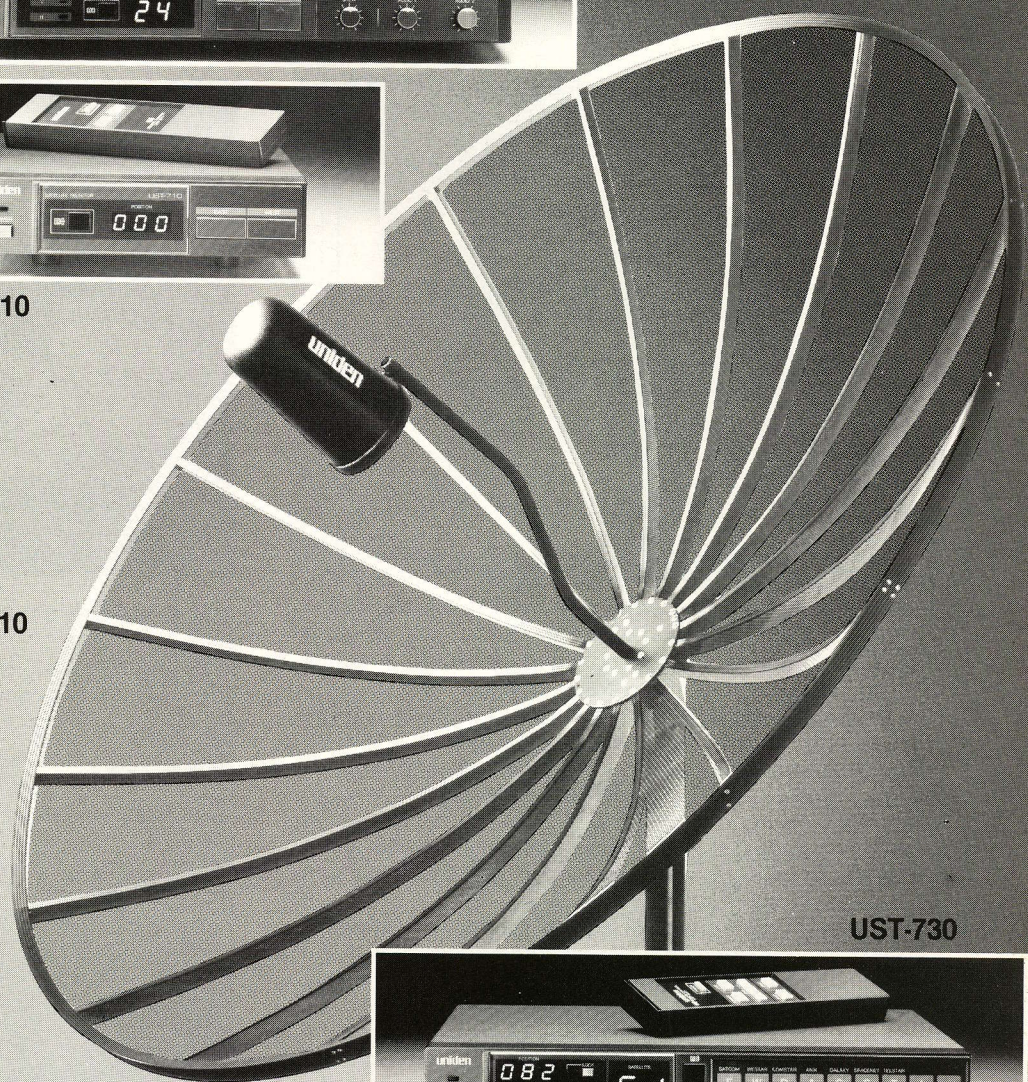


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ABC'S 20/20 PRODUCES TVRO SALES BOOST

ABC's Hugh Downs, a long-time 'science buff' and a respected reporter for several decades was first introduced to TVRO, formally, during ceremonies on 'the' White House Lawn last October. Downs talked about his introduction to TVRO as he opened the 9 minute and 29 second segment 'Tuning in the Skies' on Thursday, May 30th.

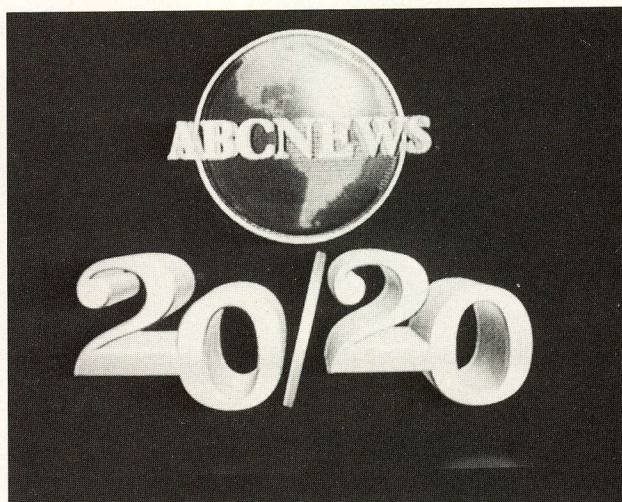
"A few months ago I ran into Apollo Astronaut Gene Cernan and his partner in Washington and they said we watch you on Thursdays. And I said 'Thank you'. And they said 'We don't mean 20/20, we mean beforehand when you are sitting there talking to Barbara'. Well, I was astonished but the answer is satellite dishes. So I acquired a dish and after it was installed and functioning, I began to look into the power and impact of satellite dishes."

Cernan's 'partner' was of course **David McClaskey** of **Intersat** and the meeting which all three attended was the startup ceremony for the President Reagan 'Young Astronaut Program' (see **CSD** for November 01; **CSD/2** for November 15; 1985). Downs was one of many on hand who were excited about owning a TVRO system at their home and both McClaskey and Cernan were excellent 'missionaries' during the event. (1)

The Hugh Downs 20/20 report actually began to jell even before the 12 foot Paracclipse dish and Intersat receiver system were installed at the Downs' home in Arizona. Intersat's **Al Bishop** began to 'feed' information and concepts to Downs and because of his considerable interest in science, Downs responded by simply developing his own intense 'study' in this entire new world of extra-terrestrial communications. Bishop was forecasting that '20/20 will do a piece on home TVRO this season' as early as last November.

'Doing a piece' on home TVRO is potentially good for TVRO; the exposure is important, and if the 'attitude' of the piece was 'correct', the impact of having Hugh Downs, the much respected Hugh Downs, on the screen saying positive, exciting things about TVRO could be very useful for the industry indeed. Alas, that would not be known until the piece, in

1/ Sadly, **Intersat's McClaskey** watched the 20/20 telecast less than a week after his firm 'closed the doors' forever as an OEM supplier to the TVRO industry. Caught with an overloaded raw parts inventory and unable to bring about transition-production of their latest IQ-170 receiver in time, Intersat joined a growing list as a victim of the current 'industry shake-out'. McClaskey was attempting to work out on-going service arrangements for Intersat products in the field (more than 15,000 IQ-160 units, for example) as **CSD** went to press.



20/20 EYEBALLS TVRO



REPORTER HUGH DOWNS on the 20/20 set introduces the 9 minute and 29 second segment on home TVRO to the massive ABC Thursday night audience.

final form, was actually on the air.

The potential for the video segment turning out 'negative' was very present. First there was the confusion over scrambling; in fact CBS would be announcing almost concurrent (as it would turn out) with the airing of the 20/20 piece that they would begin scrambling certain of their transponders shortly (2). Certainly someplace within ABC, there was an attorney who would take the position that 'any publicity about TVRO' must include adequate coverage about the possibility that (as HBO states) 'The skies may go dark'. Second, there was the confusion concerning cable. ABC has a financial interest in cable, through their ownership in ESPN and other entities. How does ABC's ESPN-connected personnel view the 1,000,000 home TVRO users? Again, such a piece on 20/20 would provide a possible forum where their views could be stated. Downs, in fact, began his report with a direct reference to the cable television industry.

"The National Cable Television Association is meeting in Las Vegas this week and the hot topic this year is satellite dishes. If there is not one in your neighborhood, chances are there soon will be (because) people are buying them at a rate of 40,000 a month (!)."

Then Downs 'warmed up' to what would become the 'style' for the report in the ensuing nine minutes of 'prime television' time.

"In a sense, dishes are video-vacuums, pulling hundreds of television channels out of the sky. But beyond that, dish owners see things that they are not supposed to see (indicating laughter and smiling)."

'Tuning In The Skies' ran through an abridged sequence that traced satellite service from Sputnik to network use of birds.

"As kids, we only imagined the possibilities. As hobbyists, some of us began to tinker and build our own. For years the technology was high-tech, and high-priced; for most of us, out-of-reach . . . up there!

"Well, not anymore. It is now down here. Recently, in Las Vegas, 15,000 dealers and manufacturers jammed a trade show devoted entirely to selling satellite dishes.

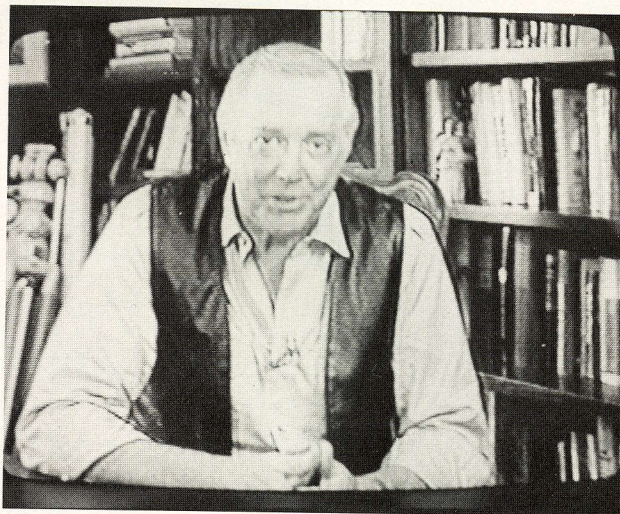
"In 1979, there were only a few hundred earth stations in private hands. **Today a million Americans own a dish;** the sky is the limit! Space has become 'the place'."

And then to support the size and scope of the TVRO industry, a number of industry participants, taped in Vegas, were trotted on screen. Some of the positive comments we heard:

"We are projecting this industry, this year, to be a two billion dollar industry. And we are talking about an industry that hasn't been around very long. I don't know many industries in this country that have had that kind of explosive growth."

And this was followed by a run-down of the various types of users of TVROs, running the gamut from American Indians on reservations to mobile home parks and even 'third world' countries. Downs then explained the 'simplicity' of operating a home TVRO system.

2/ CBS has announced that they will begin scrambling, using the ultra-sophisticated VC1 M/A-Corn scrambling system, their 'backhaul feeds' shortly CBS has been testing this scrambling package for six months. **'Backhaul feeds'** are those that originate at sports stadiums for feeding back to network control centers, or those **'pre-feeds'** originating in CBS Hollywood for transmission back to New York City for taping and later **edited release** on the regular network.



"And in spite of how it might appear, they are all easy to operate, as I found out when I had a dish installed at my desert home six months ago. I can't say that this earth station has changed my life, but it has given me a lot of viewing options I never had before. Just by rotating the dish, I can get 14 different satellites each with 24 channels.

"The opportunity (is there) to have access to more TV choices than most of us ever thought possible, including transmissions not meant for public consumption."

And the observations of a learned television program 'expert', **Les Brown**, who originally made his mark as a high-caliber 'reviewer' of television programming some decades ago. Les Brown on how he sees the TVRO 'phenomenon'.

"I think the entire broadcast industry and the cable industry especially was totally blind-sided by this phenomenon. **A satellite dish is fulfilling the promise which cable didn't fulfill or hasn't fulfilled,** so far; the promise of being the cornucopia, of really opening television to vast choices (of programming)."

And on the cost of a TVRO? Downs again.

"And as the demand went up, the costs came down. Some systems are available now for under a thousand dollars; they used to cost ten times as much. And, **it is legal to own a dish** to receive regular cable TV programming (3). Satellite technology itself is getting simpler."

Which was the 'entry point' for a simplified explanation, in lay terms, of how the satellite system functions. Using relatively simple art, the whole explanation was boiled down to a couple of sentences. Downs again.

"Television signals are broadcast, or uplinked, to satellites rocketed into an orbit above the equator. Each satellite can receive and then retransmit a number of signals at the same time. And people with dishes can then tune them in with home receivers and channel converters." Well done; does the consumer really need to understand, or be exposed, to anymore of an explanation than that? 20/20 didn't think so

3/ Cable programmers and system owners were especially hard on this 'quick statement' concerning the 'legality' of owning a home TVRO **and tuning in cable network programming.** Strictly speaking, Downs was totally correct since the 1984 'Cable Viewing Act' states just that, **in favor of TVRO.**

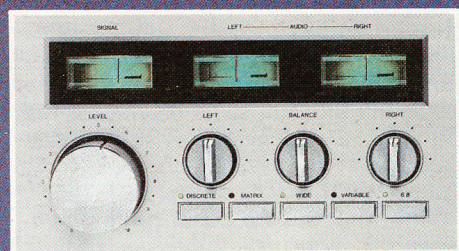
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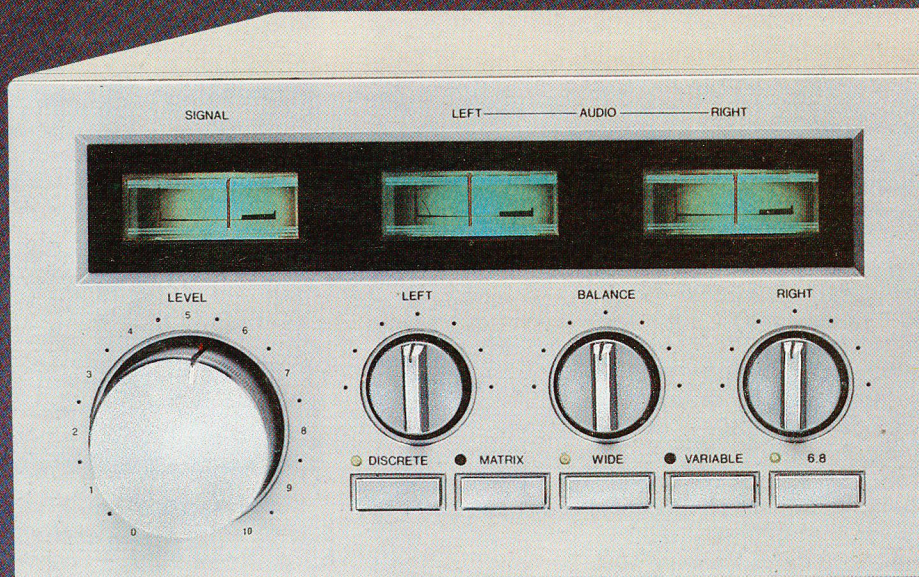
*Convenience and style
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TVRO technology makes the
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to which others will be compared.*

Audio Group



Separate meters showing Signal Strength and Left - Right audio levels are provided with soft green illumination. Left-Right audio channel tuning is adjusted by separate controls. A balance control is provided for attaining that perfect stereo effect.

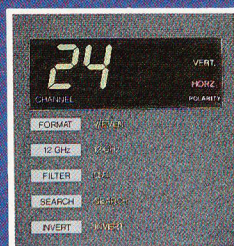
The pushbutton group consists of the "Discrete" and "Matrix" stereo buttons. Bandwidth is expanded by use of the "Wide" button. These three controls enhance the reception of all available audio transmissions.



The audio pushbuttons offer a choice of preset 6.8 tuning frequency for most video channels and variable audio for stereo or sub-carrier reception.

The Detent Volume control adjusts the volume and adds to the attractive design of the stereo section.

Function Group



The attractive display panel shows channel number and polarity position in a soft green color.

The Format button transposes the polarity mode when receiving signals from the few satellites with reversed polarity signals.

The 12 GHz button changes the operation of the SR-2500 from

4 to 12 GHz when used with appropriate 12 GHz hardware.

DNR function provides a filtering of background noise from the audio thus providing very high quality audio performance especially on weaker signals.

A Search button gives a fast scan of all channels and is of assistance during the initial alignment and orientation of the programmable moving control.

The Invert button is provided for reception of inverted video signals.

Satellite Selection Group

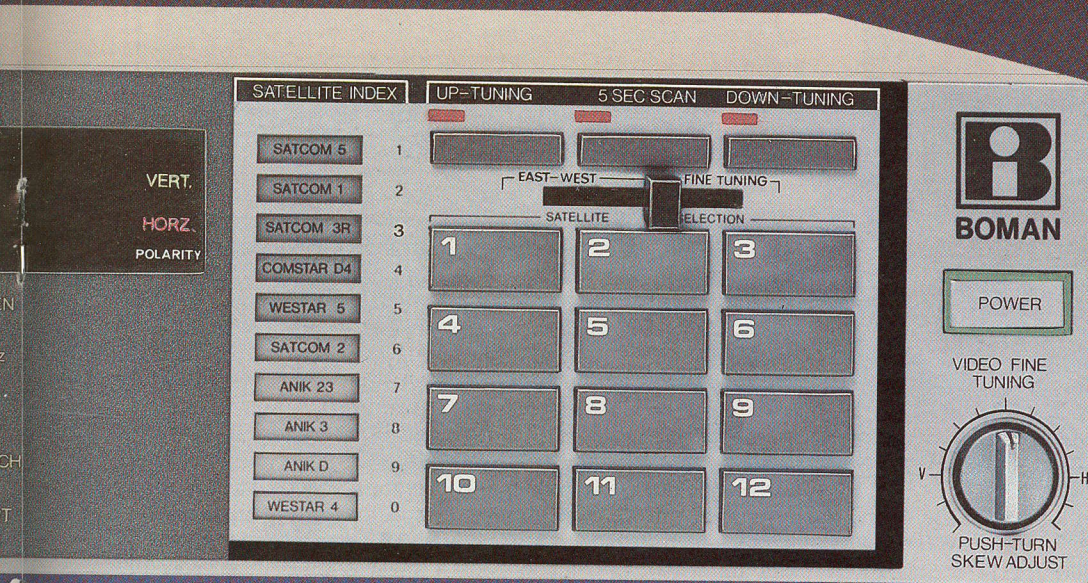


Satellite selection is accomplished with the 12 pushbutton pad.

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And
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The interfaced control then automatically moves the antenna to the pre-programed position.

A removable Satellite Index is provided which indicates the selected satellite. Up to 12 different choices of satellites may be illuminated individually. Additional satellite decals are furnished to provide a maximum of 24 satellite variations.

The East/West fine tuning control is used for that extra special antenna peaking which is sometimes required.

The "UP" and "DOWN" tuning buttons provide manual selection or scan of channels in 1 step or 2 step and continuous operation. The 5 second Scan button allows the user to view each channel for 5 seconds during the 24 channel scan.

Video Fine Tuning and Skew adjustment is made quick and easy using the dual function fine tuning control.

Other features found either inside or on the rear panel of the SR-2500 are:

- Automatic Polarity Switching.
- Command Tone Response:
A "Beep" audio tone is heard when any of the Feather-Touch push-buttons is used.
- LNA/Down Converter power remains on when the unit power is switched off: *No more LNA/DC warm-up drift.*
- Integrated Channel 3 - 4 Modulator.
- 1 - 2 Step Channel Advance Switch.
- Separate Sub-carrier Outlet.
- IF Gain Control.
- Cable Length Compensation Control.
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20/20 — continued from page 39

and there is a strong message here for those sellers of TVRO who think you have to 'teach' the writings of **Arthur C. Clarke** to every potential customer.

Of course this should be the point where we locate a 'typical' American family and visit them as they enjoy their home satellite system. Somebody at 20/20 had their head screwed on correctly; the typical American family in this case was NOT living on a farm in Iowa nor in a rural town in Georgia. This American family, the **Andy Concilio** clan, lives in 'down-town' **Brooklyn** (New York). Perhaps to 'chide' the cable industry for not yet bringing cable TV to Brooklyn, or to a number of other major US living centers, Downs began:

"There are people like the Concilos who live here in Brooklyn, New York where cable has yet to penetrate."

Andy Concilio on why he bought his TVRO:

"I wanted it for all of the sports and I rationalized for my kids that it would be great for them to watch Walt Disney all the time, and my wife said 'OK' for the movies.

"We come home from work and we look up in the guide and there will be like 35 different movies to watch; you really have to go crazy just to make a decision!"

Downs then explained the system purchased by Concilio. His explanation fit precisely the normal system being sold by the majority of dealers nationwide.

"Andy's system cost about \$3,000 and he says the family now watches more TV than ever. And he's become a hero of sorts in the neighborhood." What sort of 'hero'? Concilio explained.

"Last year, during the hockey playoffs, all of my friends — **people who I didn't even know were my friends!** — decided to call me up and come over and watch all of the hockey games."

Well, to this point we have people assured that satellite systems are **easy** to operate, are **priced** between \$1,000 and \$3,000 (up). We have them also aware that it is **legal** to tune in cable TV programs from satellites and we have an 'expert' telling us that satellite TV caught the cable and broadcast industries **'by surprise'**. For the business interests, we've been told that this is now a **\$2,000,000,000** industry, and for the would-be owner we have him doing his family and his pride a good turn by investing in a TVRO. **Nothing very negative to**

this point!

But what about the fact that ownership of a TVRO does 'expose' a family such as the Concilos to a wide range of programs which are in some cases not programs, or at best are not intended for their viewing. Downs once again.

"Satellite TV viewers often get to brag that they get to see what ordinary viewers don't." Concilio related some personal experiences.

"We would see, for example, **Peter Jennings clearing his throat**, rehearsing what he was going to say, while he was not on the air." And that seems like a good point for 20/20 to dig for some examples of a TVRO viewer 'seeing what he is not supposed to see'. They found one close to home.

Last fall, days prior to the national elections in the United States, each of the networks were busy fine-tuning their own election eve coverage apparatus. ABC, Downs' network, actually put their final 'dress rehearsal' on 'the air'. The rehearsal was exceedingly close to the real thing and for those people who stumbled across that 'Satellite' rehearsal, there was confusion. Were they watching a rehearsal? Or was this a 'pre-taping' of election eve coverage originating in some 'secret studio' within the ABC network? If it was the latter, then was the American election system totally phony? It certainly looked that way to those who didn't watch the entire rehearsal since the players (Jennings and Company) made it look very real!

"I've heard about the people who saw the ABC news rehearsals, for the elections two days ahead of the elections. And they thought the elections were 'rigged'!"

Viewer Concilio on the 'last word' on tuning in things you perhaps should not be tuning in. "People who are on television who are always perfect all of a sudden are making mistakes, sneezing, or coughing; things you will never see while they are on the air.

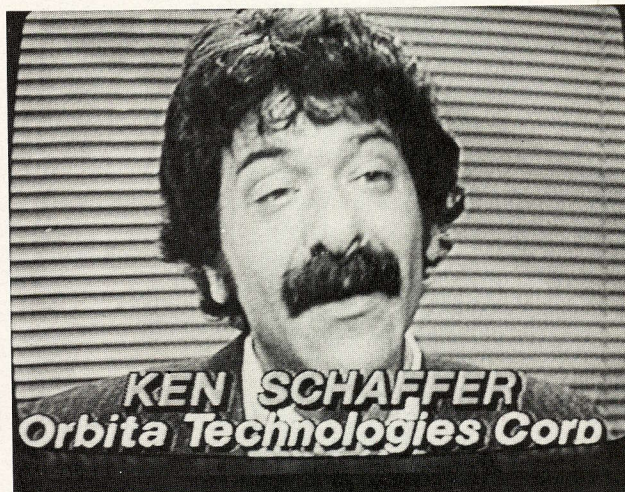
And, **"It humanizes TV"**.

Well, now we have a 'selling trap' set for those people who either suspect the world is 'rigged', or who simply like to be 'inside' on the stories and news of the day. The lure of owning a TVRO was getting bigger. **It would get even bigger.**

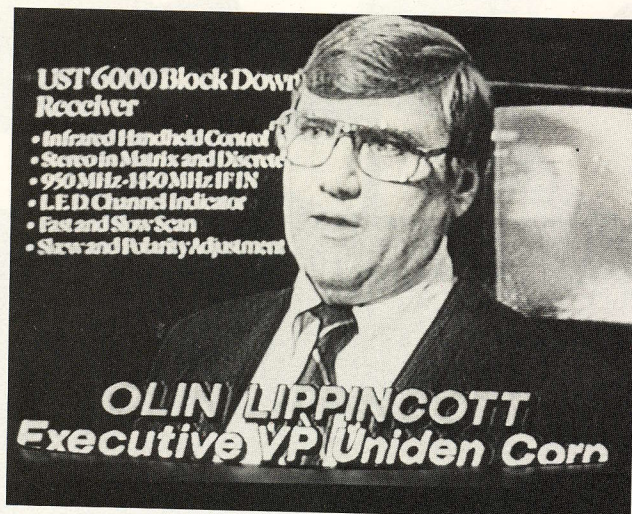
To illustrate that TVRO was more than a backyard system which was capturing the fancy of American viewers such as the Concilos of Brooklyn, the producer for 20/20's TVRO piece then took a sharp turn; 'north' as it would turn out, over



DISH OWNER ANDY CONCILIO/ "People whom I didn't even know were my friends . . ."



KEN SCHAFER/ "Imagine CBS on channel 2, Moscow on channel 3 . . ."



OLIN LIPPINCOTT/ "People will be able to buy descramblers, if they wish . . ."

the top of the North Pole, to the USSR. The object was **Orbita Technologies Corporation** and industry pundit **Kenny Schaffer**. Orbita, as **CSD** readers know from our November 1984 issue, has put together some commercial quality systems designed to receive the complicated Molniya orbit satellites which provide television relay within Russia. His most well-known system, at Columbia University, even earned him coverage spread over five pages in a recent issue of **PEOPLE** magazine. 20/20 could not resist visiting Columbia and 'mad-man' Schaffer.

"I'd like to see young kids get the thrill" started Schaffer "of turning their daddy's satellite dish from the southwest to the northeast and watching the TV that is coming from another country in another hemisphere. One day, maybe five years from now, people will accept it as commonplace that you watch CBS on channel 2, and you can watch Moscow on channel 3. **With a satellite system, you can do that today!**".

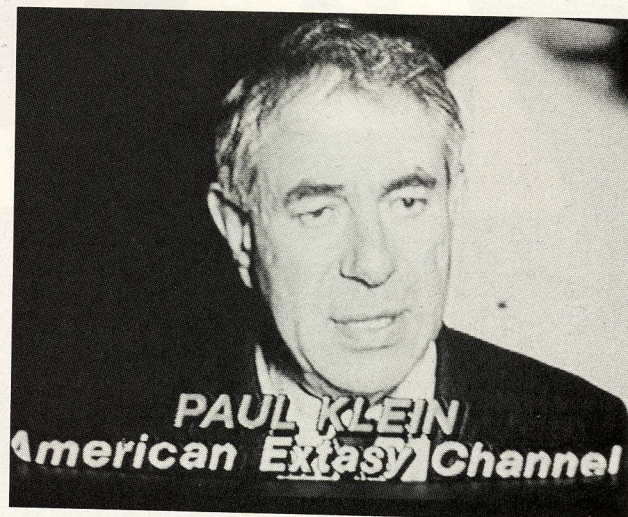
Well, almost. What the 20/20 piece did **not explore** is the wide range of non-US (or even Canadian) television programs already available to a home owner; directly from the **Clarke Belt** satellites. The emphasis of the segment was primarily the 'entertainment value' of a TVRO, and the sojourn to Columbia's 16 foot bright red **ECI** (brand) three axis tracking dish aside, the primary motivation painted by the report was simply getting **more**, or getting **'insider'** material. If neither of those subjects caught the viewer's fancy, the next topic would. Downs set the stage.

"**And today there is also 'Sex In The Sky';** uncensored programming such as the **Extasy Channel** which brings 'X-rated' fare into at least 200,000 homes **It helps sell satellite TV!!!.**"

The Extasy Channel is presently operational from TR19 on Comstar D4. It is a 'club' one joins, but the 11PM to 4AM (ET) programming is not scrambled as others scramble. Headman at Extasy is **Paul Klein**, who previously headed up the **Playboy Channel** and who prior to that was in charge of network programming for the **NBC** network. Klein had some observations to add.

"**They bought the dish for what I call 'extra television'; the sex channels are extra television.**"

So what about scrambling? Well, Klein closed by saying that not everyone wants everyone else to 'have everything';



PAUL KLEIN/ "People want 'Xtra television' and they are buying dishes for that"

alluding to some of the problems any X-rated service will have by simply being an X-rated service. Downs took this as a cue to talk about the 'threat of scrambling'.

"**The pay TV networks, and even the commercial networks,** say they don't want people tapping into their signals. So they are **experimenting** with scrambling systems, which may or may **not** work, and which may lead to **illegal descrambling counter-systems**. This threat, so far, has **not** dissuaded the people making or buying satellite dishes. The industry hopes to secure a law which will allow viewers to pay to see scrambled channels." To back that up, 20/20 went to Uniden Executive VP **Olin Lippincott**.

"**For those people who are interested in those channels which would scramble,** by law they will have to make decoders available to the consumers that want them, at a reasonable price."

Well, if that doesn't put to rest the 'scrambling fear' we have heard so much about, 20/20 went back to Brooklyn viewer Andy Concilio who repeated a basic fact of life which many share.

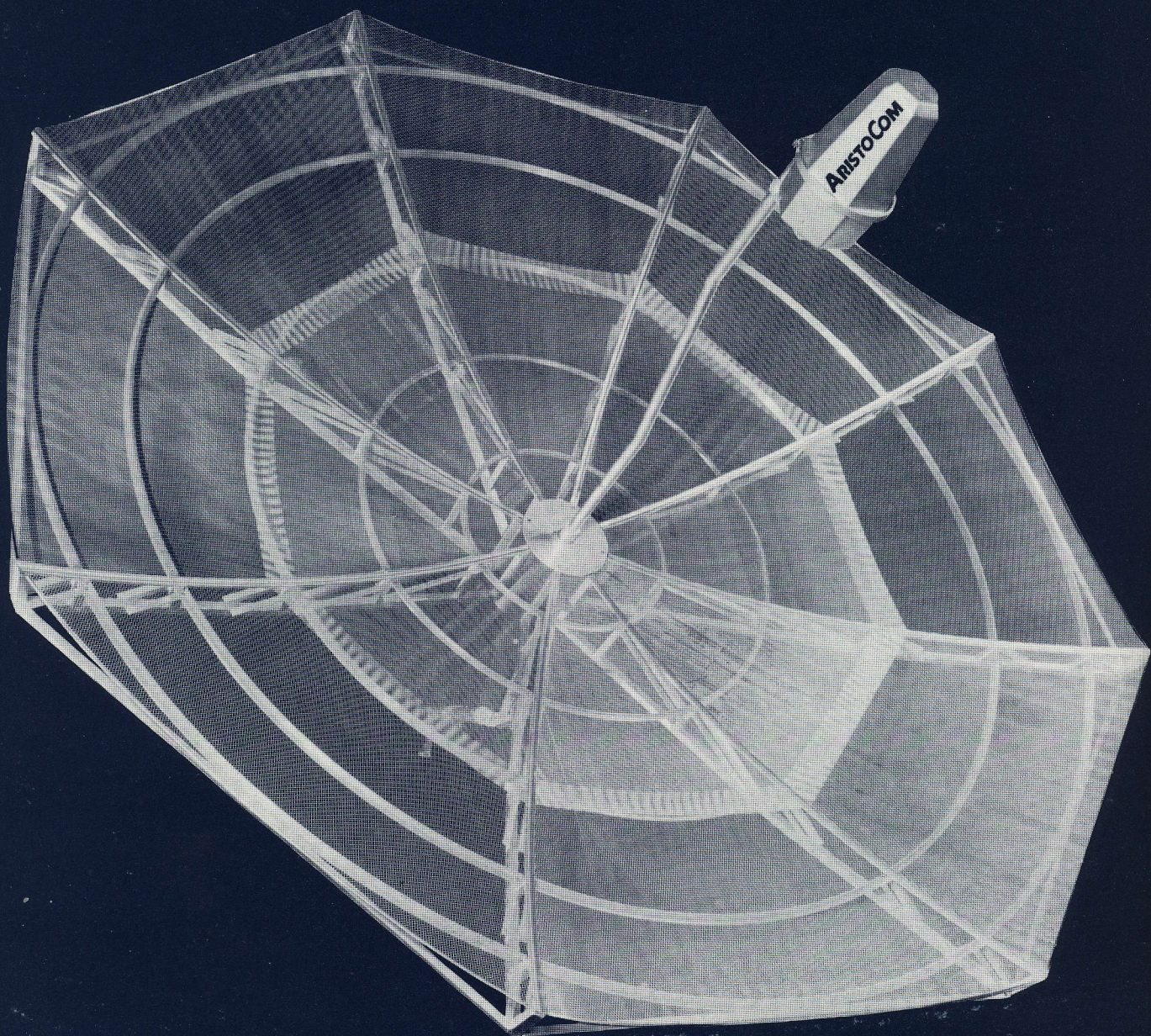
"**Scrambling is a laugh; big deal!** If HBO decides to scramble, there will still be another 145 channels to watch; plus regular TV. **So what's the big deal?**"

The camera comes back to Downs who is smiling at the Concilio remarks. His 'wrap' on the piece went like this.

"**Yeh** (in reference to 'So what's the big deal?'). If you are thinking about buying a dish, you might want to consider these tips that the experts shared with us. **First,** get with a **reputable dealer**; one with a track record, and one who will do a **'site survey'** and a signal strength test to be sure that reception is not interfered with where you want to put your dish. And **second,** check with local **ordinances** and deed **restrictions**. Some communities consider the dishes unsightly and they restrict where you can locate them; and, you wouldn't want to block a neighbor's view of the sky! **So if you decide to go for it, good luck to you . . .**"

As reported in **CSD/2** for June 15th, dealer reaction to the 20/20 segment was extremely laudatory. Of more than 20 established dealers surveyed by **CSD** and **CSD/2** in early June, **all reported** at least **some sales** resulting **directly** from the 20/20 report. Typical comments were "**People are coming in here to tell us that Hugh Downs now says that**

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owning a TVRO is legal; sell me one". Which they were doing in generous numbers; some dealers reported retail sales up by more than 500% in the two weeks following the May 30th piece.

This exposure could not have come at a better time for the industry. With serious problems at the retail level in major portions of the country (although by no means in all portions of the country), the industry needed this type of upbeat, totally positive exposure very badly. Dealers who had advance knowledge that the piece would run (such as through watching the **BORESIGHT** program one hour earlier) hopefully **videotaped the 20/20 segment**. Several dealers we talked with said that they were using the 20/20 piece in their shops as their 'number one selling tool' in the weeks following the run on ABC. **"We ask people if they saw the 20/20 piece; if they did not, we offer to let 'Hugh Downs explain TVRO to them' "** said one dealer **"and then we run the tape"**.

Reaction from the cable television industry was less posi-

tive. There was some clamor for 'equal time' from ABC, and cable execs in particular were concerned about what they characterized as "Downs down-playing the scrambling question". One told **CSD** that he was especially upset that Downs would **mention** the possibility that there **might develop** a market for 'illegal descramblers'; a Downs 'sanction' or 'approval', this CATV exec felt, for home viewers engaging in an illegal activity.

Those negatives aside, the home TVRO industry obviously has at least a supporter in television personality Hugh Downs and the rapid recovery of retail sales early in June, **largely attributed to the 20/20 segment**, might hopefully help balance out a shortage of sales during April and May. One OEM was even more optimistic. **"Suppose the fall-out from this lasts all summer; can you imagine how that would help clean out the overstocked pipelines? Now, what will we do in May of 1986 to make 'next summer' also run counter to past summer trends!"**

INDUSTRY AT LARGE

CORRESPONDENCE, NOTES, REBUTTALS AND CHARGES . . .

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DECODERS From Who?

Enclosed a mailing from Warren Supply Company in Sioux Falls (SD). It clearly is offering the M/A-Com Videocipher descramblers to us as a dealer. And I thought that we were only going to be able to obtain decoders from cable operators; yes or no?

Bob Brown
John Iverson Company
P.O. Box 699
Minot, ND 58702

No. If HBO had been able to swing it, that is how it was going to be. But M/A-Com wisely got the upper hand in this area when negotiating a contract with HBO and it was always the M/A-Com plan to offer it first through the cable firms, then through TVRO distributors (and dealers), and finally through a toll-free-telemarketing plan, directly to consumers. That's how it is now and dealers will be able to buy through their authorized M/A-Com distributors; see CSD for June 1st.

CABLE Needs Help

How's this; the 'private sector' folks helping the cable people!

Group W Cable's channel 9 in Largo, Florida hired us to downlink the F1 NASA feed on April 12th. They paid us \$400 plus they traded us \$600 worth of commercial time for our company. Also, the station engineer gave us verbal plugs (two per hour) to the extent that he noted "Coverage of the space shuttle launch is brought to you in part by Jersey Jim Satellite Services." The program was 12 hours long.

We were proud to work with the cable company on this project because it demonstrates how far the private or home TVRO sector has come. We do a considerable amount of teleconferencing for Videostar, Satellease, Netcom and other operators. And by the way, the 6 foot 'locator RV III' dish on the roof of my van was not the one we used for the event(!). We have a portable 4 meter dish which we

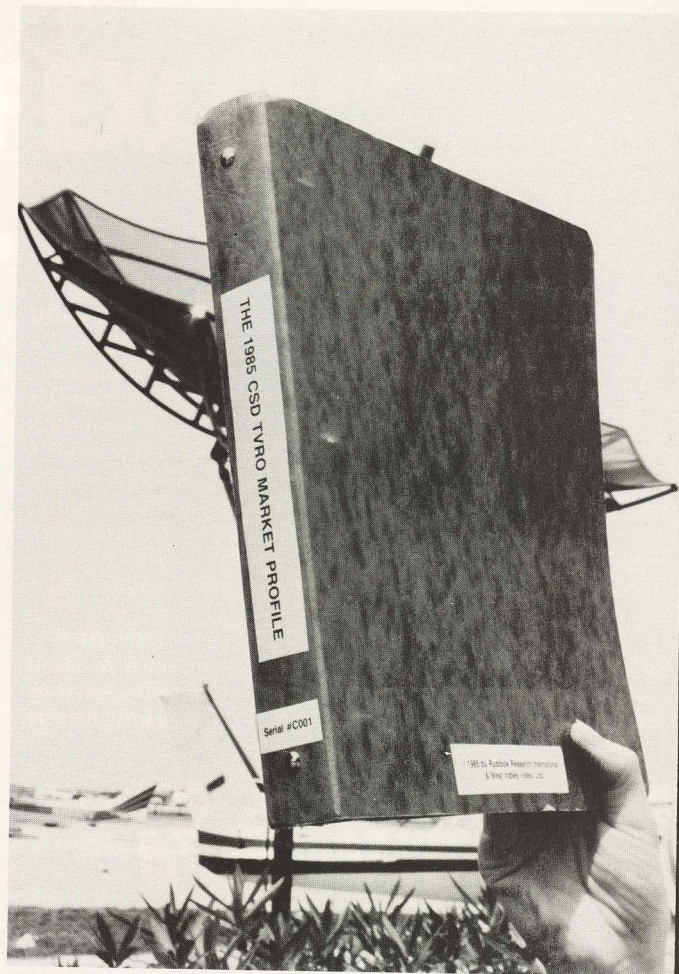
always use for downlinking applications. On this particular day, we were doing a before-hand site survey to see what the problems might be with the special F1 feed.

Rick Towers
VP
Jersey Jim TV
512 S. US Highway 19 South
Clearwater, Florida 33546



Getting TVRO commercial time on a CATV system may be a first; have any other dealers been able to buy or swap for com-

THE BIG BLACK BOOK THAT UNLOCKS THE SECRETS OF THE TVRO MARKETPLACE



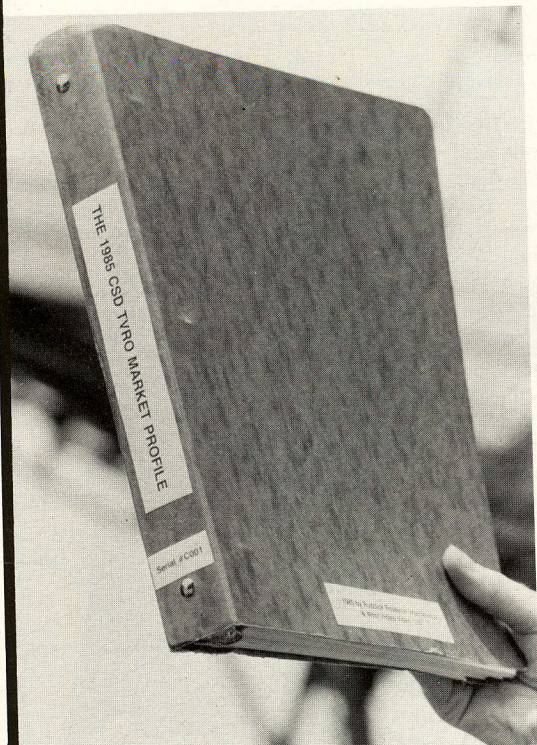
- WHO —** really makes up the 1985 TVRO marketplace? Is the marketplace shifting from rural to suburban?
- WHAT —** motivates people to buy TVRO? Movies, sports, news??? How important to TVRO owners are the **unscrambled** network TV signals?

NOW for the first time there is a 'definitive profile' of the TVRO marketplace; a detailed, perceptive look at the demographics of the TVRO consumer, complete with behavioral segmentation profiles! More than 2,000 present-day owners of TVRO completed a 43 question, four-page survey designed by skilled marketing strategists to elicit data which would allow a full computer tabulation of the 'demographics of TVRO.'

THE 1985 (CSD) TVRO Market Profile contains 150 pages of charts, analysis, tables and summaries. 'The Profile' provides insight into the motivations of TVRO purchase and reveals important 'user satisfaction' and TVRO system 'use profiles' for the first time. 'The Profile' is skillfully edited and arranged into sections to allow cursory, intermediate and in-depth analysis of all of the important factors influencing TVRO purchase and use.

Within the 150 pages there are 32 'basic tables', 49 'cross-tabulation tables' and 38 'behavioral tendency tables'. A 16 page 'Executive Summary' backed up by 22 pages of 'summary tables' is tailored for the busy management person who needs to understand the basic motivations of TVRO but who does not have the time to prepare his own analysis.

'**The 1985 (CSD) TVRO Market Profile**' is available to you on a confidential basis for use limited to within your organization, and it may not be reproduced nor printed in any form without the written consent of the copyright holders.



METHODOLOGY/ Nearly 5,000 home TVRO system users were identified through an arrangement with a cross-section of TVRO hardware original equipment suppliers. A random sample of warranty registration card files provided a master 'survey universe' covering the period 1980 through 1985, spread over all regions of the United States and outside the USA where DOMSAT (domestic US satellites) can be received. Survey results are based upon 2,086 responses (43.6%) received by the specified cut-off date. The study was conducted under contract by Ruddick Research International.

Partial listing of questions included in original survey form: How long had satellite earth station? **Region of country?** Primary use of system? **Factor that convinced you to buy system?** Number of broadcast television stations you receive? **Currently have access to cable TV system?** A subscriber to the system? **Pleased with cable service receive(d)?** Total number of hours per week satellite system used by all members of household? **Satisfaction with satellite receiving equipment?** Satellites tuned-in three or more times per week? **Category of programming viewed most frequently by household on satellite?** Categories of programming viewed next-most frequently? **Important source of satellite programming information?** Main benefit expected from satellite equipment? **How much spent on satellite receiving equipment?** Other electronic equipment currently have or own in home? **Live in incorporated city or town?** Population of city or town? **How far from residence to nearest city of 100,000 population or more?** Anticipate replacing or adding satellite receiving equipment within next 12 months? **Equipment plan on buying?** Age of head of household? **Family status of household?** Income of household? **Education of head of household?** Occupation of head of household? **Publications subscribed to or read regularly?** Programming sources viewed through satellite: **ABC, CBS, NBC, WTBS, WGN, USA Network, CBN, ESPN, HBO, Cinemax, Showtime.** Type of products usually purchased? **Buy sooner if on credit?** Generally a 'risk taker' in purchasing? **When shopping, generally buy more than anticipated?** Use 800-toll-free numbers when shopping? **Tend to buy merchandise based upon lowest pricing?** Consult literature and publications for education before buying? **Generally compare prices before buying?**

Partial contents of '1985 (CSD) TVRO Market Profile': **Market Characteristics/** Location of residence in cities-towns; Age of head of household; Family income levels; Family status of household; Location of residence by region; Educational level of head of household; Occupation of head of household; Magazines subscribed to or read regularly. **Behavioral Segmentation Profiles/** Urban novelty seeker, Impulsive credit buyer, High-tech innovators, costly system owner, upscale low-end user. **Purchase Dynamics/** Length of ownership; Factors in purchasing decision; Number of broadcast stations able to receive prior to TVRO; Major benefit expectations; Cable TV access-subscription-satisfaction; Electronic equipment cross-ownership; TVRO system upgrade potential (age of system, cable access-subscription-satisfaction, equipment cross-ownership). **Usage Patterns/** Viewership; Satisfaction; Satellites viewed; Types of programming viewed; Services viewed (Viewership, Programming viewed).

HOW TO ORDER:

'The 1985 (CSD) TVRO Market Profile'

PLEASE enter our order for a single copy of the 150 page '1985 (CSD) TVRO Market Profile'. Our check for \$1,000, to West Indies Video, Ltd., is attached. We understand that this 'Profile' is being sold to us with our agreement that no portions may be duplicated for distribution nor published without the written consent of the copyright holders. We also understand that our copy will be sent via Federal Express within two working days of receipt of our order and payment.

Ship to:

NAME _____

COMPANY _____

ADDRESS (street only) _____

CITY _____ STATE _____ ZIP _____

Telephone Number: (_____)

We agree to the confidentiality terms of this 'Profile':

Signature

Title

Order from:

West Indies Video, Ltd. Fort Lauderdale, Fl. 33310
P.O. Box 100858 (Telephone 305/771-0505)

A LEGACY OF EXCELLENCE CONTINUES.

Viewstar, Inc.:

- Developed the first infrared remote, fully programmable digital converter.
- Developed 300 MHz crystal controlled UHF block up-converter.
- Patented CCD scrambling technology.
- Developed first remote volume control stand alone digital converter.
- Developed non-volatile parental control in CATV converters.
- Developed addressable baseband scrambling system for pay TV.

And now, 1,000,000 units of CATV converters later, a new star is born to the home satellite TV market, the latest in state-of-the-art receiver technology . . . We call it simple yet sophisticated.



Viewstar

Viewstar, Inc. 55 Milner Ave.,
Scarborough, Ontario,
Canada M1S 3P6
(416) 298-9919. In USA call
Spectrum Consulting Services
(203) 928-0491.



DEALERS/

COOL

complete the survey 1
program on August 2
'live-on-tape' drawing
entrant as the winner!

INSTRUCTIONS: C
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STATE

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2) Years (months)
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B) Between May
C) Between Jan
D) Between Jan
4) Total Number TV
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A) Between Jan
B) Between Jan
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B) Part-time
C) Full-time
D) Part-time
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G) A 'part-time' s
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C) _____ Unchang

2) Sales, by month to

A) January 1985

B) February 1985

C) March 1985

D) April 1985

E) May 1985

F) June 1985

Please indicate the

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A) Change

B) Change

C) Increase

D) Greater

E) OTHER

YOUR BUSINESS

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CORRESPONDENCE/ continued from page 46

mercial time from their local cable company to date? Who says cooperation between cable and TVRO is impossible!

HANDS-On Dealer Training

Last night I was re-reading some older issues of CSD and I came across your article titled "More Professional Dealers" in CSD for November 01, 1984. I was attempting to update our own training program with more detailed information for our sales reps and then discovered in CSD that I did not have to re-invent the wheel!

Yes, please enroll ARDCO in your 'Hands-On Dealer-Training Program.' ARDCO has 9 sales reps covering Northern California from Ukiah on the north to King City in the south. Our salesmen sell a full line of electronic parts as well as satellite equipment. We call on approximately 120 dealers who sell some (or a lot of) TVRO equipment out of a total electronic/shop universe of perhaps 1,000 accounts. It takes one of our men about two weeks to properly cover his territory.

ARDCO is a master distributor for Winegard, Channel Master, Kaul-Tronics, Chaparral and General Instrument equipment. We began distributing the first TVRO equipment some five years ago and have been in business fifty years with presently six branches in California.

I personally enjoy reading and re-reading CSD as often as possible. As sales manager, most of our problems eventually fall into my lap and I always seem to find the right answer in a current or older issue of CSD. Thanks again for CSD and keep up the good work.

Ken Burns

Sales Manager

ARDCO Electronic Distributors

980 South First Street

San Jose, California 95110

Our 'Hands-On' Dealer Training Program works in this way. Distributors with sales reps on the road are shipped VHS videotapes each month. The typical tape runs 10 to 15 minutes in length. Each tape has one or two (stacked) 'technical topic' shorts created at the CSD Lab on Provo. The topics vary but generally deal with some current technical topic. The distributor reps haul the tapes with them on their sales calls and show it to TVRO dealers who want to learn the latest. At the end of the month the distributor sends us back the tapes plus a list of dealers who watched the tapes. And we send a new set of tapes to start the process all over again. We have around 10 distributors presently participating in the program and have lost only one since it began (he objected to our referencing products in the Technical Tips which he did not handle).

WHICH Is Best

I have searched through several issues of CSD for information which would better help me understand the manufacturer's printed specification sheets. I need to better understand how you translate the technical jargon on the back of the specification sheets into solid knowledge that helps you make a decision on which receiver is 'best.' All of the gibberish I see on the specification sheets means nothing to me; except that it must have some reason for being there, if only I could understand it!

I am further confused by the large variation in receiver prices. Why are receivers priced so widely apart? Are there more or better components in some than in others? Or are the prices predicated upon what they think the market will bear? A case in point is the drop in the price on the Drake 324 when they recently 'went to Japan' for their production; \$100 to me. The only response I get from the sales rep is "Our receiver is the best." They of course cannot 'all be the best' and after three years in this business I have learned one thing; a pretty package does not improve a poor

THE ROAD TO SUCCESS IS MEASURED BY SUPERIOR QUALITY

For any business the road to success is long and difficult. But measured by the quality of Superior™ aluminum mesh antennas, the road is shortened considerably.

Superior™ high performance antennas are scientifically designed for low wind resistance, light weight and stability in the field. And because we want our Superior™ quality to shorten your road to success, the manufacturing process of our five and one-half, eight, ten, twelve, sixteen and twenty-five foot antennas are monitored by a strict quality control program.

U.P. Superior Satellite Dish Manufacturing. Our Superior™ quality shortens your road to success.

**U.P. SUPERIOR
SATELLITE
DISH MFG.**

1651 17.4 Rd., Escanaba, MI 49829 906-789-1027



Micro Dish

Logan, OH
1-614-385-3200
Outside Ohio
1-800-638-1864

John-Co Electronics

Auburndale, WI
715-652-3175

Satellite TV Systems

Marquette, MI
906-228-2324
1-800-551-0551 U.P. Watts

Buddy's Electronics

Live Oak, FL
904-362-4505

Herman Electronics

Miami, FL
305-634-6591

National Micro Dynamics

Chattanooga, TN
800-845-0813

Stellarview Satellite

Surfside Beach, SC
803-238-1098

Vidcom Satellite

Rochester, NY
716-225-6130

Lycon Farm Implement

Palestine, IL
618-586-5246

T & T Satellite

Glenns Falls, NY
518-792-4913

Satellite Antenna Systems

Houghton Lake, MI
517-366-9419

C-Z Labs

Garnerville, NY
800-423-2322

Ultra Satellite Systems

Jarrettsville, MD
301-557-8381

Telsat East

Front Royal, VA
703-636-1777

Bell Services, Ltd.

Paget, Bermuda
809-292-4500

'Receiver Specifications/ What They Mean.' **March dealt with down-converter specs while April dealt with receiver IF bandwidths. Our June 1st issue covered receiver audio specifications. The series continues. However, our fall-release '1986 TVRO Handbook' devotes an entire chapter to 'reading and understanding TVRO system specifications' and for those who need or will benefit by a complete single-source treatment of this vital subject, 'The Handbook' will be your best source.**

CHURCH Needs Assistance

I am interested in locating a source describing the design and construction of a satellite dish antenna. We have an abundance of local labor available and given adequate instructions, I feel certain we can build a suitable antenna for our non-commercial use. Any help would be most appreciated.

Rev. Aloysius A. Budnick
Sacred Heart Church
Sandy Point
St. Kitts, West Indies

Readers interested in developing a friendship (thereby creating an 'excuse' to visit St. Kitts) **can assist Reverend Budnick directly with his project.**

DEALER Self-Help

We are a service-oriented business and we run classified service advertisements in a few satellite publications. We expect to do a modest amount of service business for brand names such as Uniden, Automation Techniques, Drake, KLM and others for which schematics are readily available.

However, every now and again we run into what must be called a 'white elephant'; a receiver manufactured by some little known firm in what was probably a small volume for a brief period of time. The company is no longer in business and the consumer who bought the unit, direct, through a dealer or whatever, is left with what appears on the surface to be an 'unfixable product'. Why? Simply because there is absolutely no service information available for the unit!

Many times we have spent hours trying to trace what happened first to the company and then the records of their products. This involves considerable telephoning or letter writing, playing a bit of a 'detective' trying to trace the origins of the unit so that hopefully some information can be collected which will help us diagnose the receiver circuits and effect a repair on the receiver.

The loser in a situation like this, which happens all too often, is the poor consumer who bought in what was originally 'good faith'. The money spent on the product can turn into a virtual write-off if there is no way to repair that product when it finally does develop problems.

What I would like to propose is that the industry band together to create a **reservoir of schematics and service manuals** (where they exist) for virtually every receiver and actuator and controller ever built. This is no small task but it is one which will have many rewards for all of our customers in the years ahead.

Our business, directed at service more than sales, would be pleased to volunteer as a collection agent for this information. Now, while the industry is still quite young would be none too soon to begin this exercise. Surely out there somewhere we have at least **one schematic of every receiver** ever built and offered for sale in the industry.

If the industry will get behind this effort, **we will in turn gladly make these files available to anyone** who finds themselves in need of such a schematic or manual in the years ahead. The important thing right now is to start collecting the data before it is tossed out as 'worthless'. As long as there is still one receiver still operating in consumer hands, no schematic or manual is truly 'worthless'.

Let us hear from you so that we can create this important reservoir of servicing information before the basic information is lost forever!

Judy Showers
Vice President
Carlisle Radio and TV Co.
1322 Spring Road
Carlisle, Pa. 17013
717/249-2511

CSD applauds the (Bob and) Judy Showers initiative in this area and urges readers at all levels to cooperate. We have further offered to fund duplication expenses for the Showers as this valuable industry resource grows so that anyone who ever finds a need for a hard to find schematic will not be slowed down by duplicating expenses. **Do your part now;** dig through your files and send the material to the Showers immediately!

SELECTING Dealers?

First of all, thank you for all of the good reading. My husband and I devour **CSD** from cover to cover the day it arrives (we need two copies to keep us from fighting over it!). I have a serious matter and I would appreciate your advice. It involves our relationship with our distributor.

We started our satellite dealership in May of 1984 and began our relationship with our distributor. I had corresponded with their marketing director and had received many encouraging words and promises of helping our new company grow. The distributor has been fully aware from the outset that we were working 'part-time' until my husband was discharged from the Air Force. That happened this May 14th.

To get started we ordered several high-end systems. We stress service after the sale and with my husband's radio and electronic training gained in the Air Force, we have the technical knowledge to back that service up. Our customers have been happy with the knowledge that we are always just a telephone call away.

During our dealings with our distributor, a problem arose. We had searched the telephone book initially as well as the newspapers and we had asked around finally deciding that we were in a good location for our business. And we 'hung out our shingle' to announce to the world that we were in business. We also attended a block conversion seminar at our distributor's business to learn as much as we could. As soon as our sign was up, a man from a mile or so down the road came by in his 'mail jeep' to warn us in stentorian tones that 'we didn't have a chance to succeed because THIS was HIS territory.' Being all for free-enterprise and realizing that competition is great, we ignored the warning and plowed ahead even though we (unlike this competitive dealer) did not have fifteen years of experience selling used cars and swimming pools. We are totally in favor of free enterprise and feel we have been successful in establishing a reputation for integrity and good service.

Now, with my husband being discharged from service, we were finally ready to open our door as a full-time dealer. And what did we find? An advertisement in the newspaper listing "XXXXX Authorized Dealer". I called the distributor and was given mouthfuls of platitudes of how they could not have 'authorized' two dealers in the same area, but that they still would send consumers here anyhow. If I had a nickel for every customer that has stopped here asking directions to the other guy's place (sent by the distributor), I could retire from selling satellites! And I cannot tell you how sickening it is to see all of our hard work jeopardized in this manner. The distributor, by the way, assures us that they will continue to sell to us. Is this the way this industry is going???

And why us, when we have worked so hard to establish this business here?

We have been hearing from the outset that dealers should be qualified at more than merely selling. Our qualifications are considerable thanks to my husband's background and training. But whom does the distributor 'select' to make an 'authorized dealer'? Unfortunately, not us. It is galling to say the least.

Far from giving up, we are more determined than ever to succeed. But if 'might makes right', then we have quite a challenge ahead of us and chalk up one more blow against the free enterprise system for this distributor. They will never see another penny from us and their glowing image is forever tarnished at least in our eyes.

Debra Kopp
North Country Satellite Systems
RD 1, Box 231
Remsen, New York 13438

Through the years many distributors have been accused of 'selling to anyone with the money' and in many states where re-sale tax certificates are not required as a condition to 'buy wholesale' legitimate dealers have complained that they were competing

**We still believe
promises are golden.**

NSC

COMMUNICATIONS
NATIONAL SATELLITE

**While many reflect
their good intentions,
strong principles
create our image.**

Basic truths form the foundation of our Nationwide Service Commitment. Time and effort have made NSC a national distributor for all major brands of satellite receiving equipment. Quality support to our vast network while keeping the best interests of the consumer at heart, have meant something. Years of uncompromising professionalism helped shape our mutual goals. We constantly strive to be the best and encourage and train our dealer network to do the same.

Call (Toll Free) today for the location of the nearest "Authorized NSC Dealer". Through NSC, his promises to you are golden.

For More Information:

In New York: 1-518-383-2211

In Florida: 1-305-851-4738

To Place Orders Call:

New York Office:

1-800-833-4485 (National)

1-800-522-3538 (In State)

Florida Office:

1-800-322-4044 (Regional)

1-800-832-8659 (In State)

TELEX: 324701 SATELLITE



**NATIONAL SATELLITE
COMMUNICATIONS™**

CORPORATE OFFICE:

21st Century Park
Clifton Park, NY 12065

FLORIDA OFFICE:

10779 Satellite Blvd.
Orlando, FL 32821

PIONEER MEMBER OF
SPACE®

KANSAS CITY OFFICE: (LOCAL) 913-888-6333 (STATE) 800-432-0141 (NATIONAL) 800-633-5027

against distributors who sold wholesale to consumers. A few distributors are trying to clear up that image and one way to do this is to take your total 'dealer universe' and then by some method 'select' those dealers who seem to have the resources and total dedication to TVRO selling full-time to be in the business for the long haul. Such a dealer is made an 'authorized dealer' through some sort of qualification program (volume per month, presence of a store front, business qualifications and so on). Your 'part-time' business apparently got caught in that 'shake out' and while you know, and now we know, that your intentions were to be full-time as soon as your personal circumstances would allow, perhaps the distributor in question did not know. Or, if he did know, he felt he could not wait for you to go full-time before

selecting an 'authorized dealer' for your territory. The concept of 'exclusive, authorized dealers' does make sense and if the program is honestly and properly administered, it has real value for those dealers who become a part of such a program. In your specific case, you were simply not ready when the distributor was ready. Perhaps he made a mistake in selecting the dealer down the road from you; we can't comment without a more detailed investigation. By going full-time, you now have the opportunity to re-select a distributor and you also have the benefit of the experience you have just gone through. Next time you are bound to be a smarter selector of a distributor and you probably will come out of this experience for the better, as painful as it obviously has been.

TRANSPONDER WATCH

RECENT REPORTS OF ACTIVITY ON DOMESTIC / INTERNATIONAL SATELLITES

Send your reports to CSD Transponder Watch, P.O. Box 100858, Ft. Lauderdale, FL 33310. For late news, call (305) 771-0505.

NCTA/ National Cable Television Association, Board of Directors, voted to authorize trade association to investigate feasibility of creating a 'cable TV industry' programming cooperative for scrambling of ALL cable intended programming sources. NCTA study group plans mid-July meeting to assess plans, which are similar to those suggested by cable MSOs and M/A-Com in recent weeks (see CSD/2 for June 15th).

CABLE industry funded study projects 5% of US Homes, with cable available, will have converted to home TVRO by 1990. Study suggests cable operators must be prepared to 'sell services' to private TVROs users within their franchise areas, or, face dilution of their own operating profits.

LOOK for HBO to gradually increase percentage of day during which eastern zone feed is scrambled as 'marketing tactic' to remind TVRO users of the reality of scrambling. HBO testing eastern feed between movies since April, is now stretching scrambling periods into start of movie and feature programs.

INTELSAT plans to reduce further charges it makes to 'domestic lease' customers. Network finds many 'available' Ku band transponders as well as C band hemispheric and zone channels and proposes lowering rates to \$680,000 per year for global, hemispheric and zone beams and \$750,000 for C band spot beams. Ku band rates would lower too by about 10%.

FCC has decided to 'freeze' applications for new 'international, private satellite systems' with six now 'in-house' for consideration. FCC presently has no firm policy regarding authorizing international, private satellites and since first application appeared several years ago, there has been intense pressure from Intelsat and Comsat to convince US government NOT to approve any private, competitive systems to Intelsat. US will go ahead, but format still not finalized.

MISSISSIPPI Congressman Wayne Dowdy told NCTA convention "I am personally opposed to a two-year moratorium (on scrambling); I don't think it will get anywhere, it is too far fetched." Cable opposition to SPACE backed bill is building.

UK move to deregulate private TVRO use and SMATV systems has a couple of 'kinks' (see page 16, here). SMATV systems will be required to carry all terrestrial as well as any future UK operated (DBS) satellite signals in addition to satellite programs chosen on system by system basis. Same rule applies in USA and is called 'must carry rule.' Some confusion whether hotels can install satellite antenna plus

distribution systems without getting clearance from cable authorities. New deregulation opens up SMATV in areas of UK where no cable franchises exist or where none are likely within five years but on-premise hotel installations present 'special case' requiring government clarification of deregulation rulemaking.

FRENCH TELECOM 1B bird, settled now at 5 west (1A at 8 west), is being tested on 4, 7 and 11/12 GHz. Bird completes French program for coverage to Americas and Africa for present generation satellites.

EQUATORIAL Communications providing more than 500 C-100 terminals to all offices of National Weather Service, FAA and several Defense agencies. 24-hour service presently uses terrestrial lines to feed comprehensive flight and storm weather data and forecasts.

DBS industry, for 12 GHz service, down to the wire and unable to agree on satellite or receiver specifications or (transmission) standards. FCC had urged private satellite operators to reach agreement in lieu of federal determination of standards.

EUROPEAN nations meeting now to determine whether multiple nations can work together for next generation DBS package system for all of Europe. Very large satellite, up to 22 transponders, more than 100 watts per transponder, is likely technical form if political compromises can be met. Future of 12 GHz DBS, in Europe, riding on decision.

ARABSAT-2 bird, once likely to be delayed from June shuttle launch, went ahead after engineers decided to chance a repeat of minor problems with deployment of solar panels on #1 bird.

JAPANESE plan for private satellite system, possibly using Hughes Ku band birds, has been 'over-subscribed' with virtually total capacity of two 32 channel birds sold out weeks after announcement of availability. Japanese government recently gave tentative approval to a pair of 32 channel birds opening way for private firms to sign up for transponders.

TWO-WAY use of satellites for direct connection between embassies and their national capitals under test; Russians have requested permission to transmit from their Belgium embassy back to Moscow using Gorizont bird at 14 west. Most nations accept that embassies can receive via satellite but until now none have approved direct uplinking from embassy grounds located in foreign country.

BRITISH installers of early private Ku band terminals already running into severe 'zoning' and 'land use regulation' problems. Individual developments have highly localized zoning approval boards

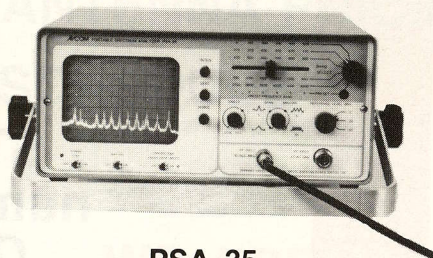
AVCOM

SATELLITE RECEIVERS • SPECTRUM ANALYZERS MICROWAVE INSTRUMENTS AND COMPONENTS

Quality, Reliability & Ease of Operation
For Your Specific Needs

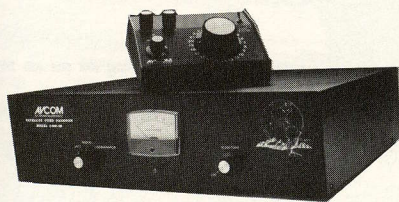
AVCOM is known for its high standard of performance, reliability and value in a full range of communications equipment to meet your every need. The quality and workmanship that has gone into the design and production of AVCOM's full line of Satellite Receivers is also a "standard feature" of AVCOM's new line of Spectrum Analyzers, featuring the Portable PSA-35.

NEW! ANOTHER INDUSTRY FIRST FROM AVCOM!



**PSA-35
SPECTRUM ANALYZER**

AVCOM's PSA-35 Portable Spectrum Analyzer offers frequency coverages of 10 to 1500 MHz and 3.7 to 4.2 GHz for checking signal strength, inband attenuations, terrestrial interference and filter alignment, faulty connectors and LNA's, feedhorn isolation, and cable loss at all frequencies used in the TVRO industry, including 12 GHz downconverters.



COM-3R

AVCOM's COM-3(R) Series of reliable Satellite Receivers features 24-channel detented tuning, APS-24 (automatic polarity switching), crystal controlled modulator, unclamped video output for decoders, tunable audio (4 to 8 MHz) with wide and narrow IF bandwidth, sensitive signal strength meter, excellent threshold sensitivity, scan-tune circuitry, and internal DC power block. The COM-3 features a convenient remote control unit for ease of operation. The COM-3(R) Series is among the best performing Satellite Receivers available for weak signals and excellent video reception.

SPECIAL HALF-TRANSPONDER RECEIVERS FOR INTERNATIONAL- TYPE TRANSMISSIONS

AVCOM's COM-3, COM-3R and COM-60 Series Receivers can be ordered with options to receive half-transponder international-type signals. The THRESHOLD PEAKING option greatly enhances threshold performance on weak half-transponder signals. The DUAL IF electronically-switched full and half-transponder filter option allows reception of international-type signals as well as standard domestic satellites.

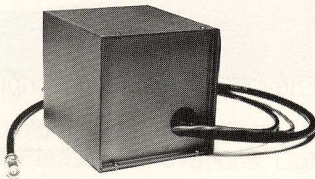
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COM-66T

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COM-2A

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SCPC-100

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and to date most asked to approve 1.2 meter antennas are saying 'no.'

NOT giving up. Intelsat claims US FCC violated international agreements by allowing CNN to receive Gorizont transmissions direct. FCC recently authorized CNN permanent reception terminal for Gorizont at 14 west and earlier approved temporary reception of specific Soviet transmissions covering eastern European celebrations of 40th anniversary of end of World War Two.

M/A-Com says first C band stand alone descramblers, VC2000E, should be available from Puerto Rico production facility late summer, perhaps 1 September. At press time, no established TVRO receiver OEMs had agreed to redesign receivers for adaptation of VC2000M module unit.

CANADIAN CANCOM and Telesat are studying 'feasibility' of offering 8 channels of 'quasi-DBS' using old USCI satellite and 1 meter dishes. Target audience would be approximately 1.2 million Canadian homes considered 'underserved' by terrestrial TV or cable.

BELGIUM cable networks are tapping into the USIA 'Worldnet' transmissions carried on ECS-1 and distributing them on an 'experimental basis' to cable homes. Transmissions, originating in USA (see CSD for November 01, 1984) are intended primarily for press and diplomatic personnel.

WTBS Atlanta, according to Southern Satellite Systems common carrier, will not scramble prior to mid-summer of 1986 but will coordinate with Turner plans to scramble CNN and CNN/2 in any event.

ANIK C-1 in store position of 107.5 west and Canadians do not plan to call on satellite for active use prior to 1988 at earliest.

JAMMING of feed on The Movie Channel, late in May, perplexing to cable programmers. It is not possible to determine from earth where interfering signals originate except by process of shutting down one uplink at a time on coordinated basis. Accidental rather than purposeful interference is blamed for event.

HOLIDAY Inns Hi-Net operation is offering FREE TIME on satellites to educational and non-profit groups during July and August; details from 901/369-5626. Downlink sites, at equipped Holiday Inns, are available as part of package.

FIFTY foot satellite transmit antenna, by far largest ever tested, has been approved by NASA. Previously, 30 foot ATS-6 antenna was largest used in space. If 50 footer is put into orbit, exceptionally small receive antennas would be practical, as well as very tight boresight illumination patterns.

TV5, French service on ECS-1, stopped scrambling of service in June and this makes all of the ECS-1 and Intelsat V 11 (12) GHz European service channels 'in the clear.'

BRITISH launch vehicle called HOTOL would 'fly' from London to Australia in 45 minutes time, carry around 60 passengers. Along the way, it could launch satellites or retrieve birds in low orbit.

EUROPEAN study shows how many hotel SMATV systems might be sold in Europe over next five years. Identifying number of hotels with 100+ rooms, study finds England has 650, Austria 640, West Germany 700, France 500, Switzerland 450, Spain 500, Netherlands 200 and Sweden 160. Total for all of western Europe is over 4,000 hotels. Same study identifies more than 10,300,000 MATV homes which could be upgraded to SMATV systems.

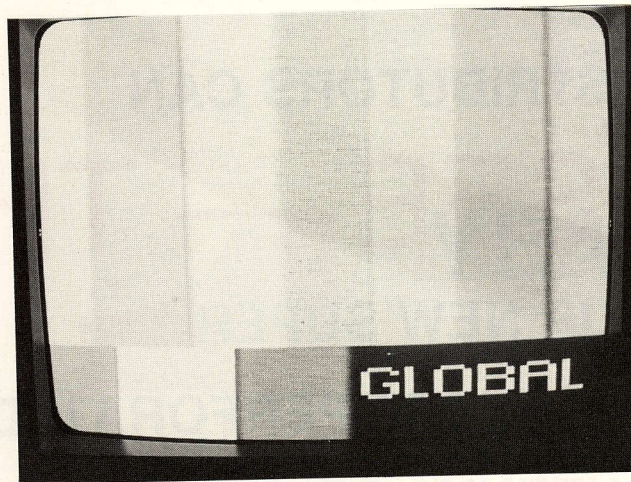
JAPANESE BS-2B satellite, due to replace 2A satellite that lost two of three transponders when French traveling wave tube amplifiers quit prematurely, not likely to launch before next January-February 'launch window.'

AT&T has given FCC back orbit plans for Telstar 304 bird. FCC had approved four birds for telephone company and now firm says they won't need fourth bird after all, and recently launched 303 will be last needed.

NBC is equipping 50 of its Ku band connected affiliates with uplinks. Network hopes to gain news edge on CBS and ABC with move.

RCA reports nearly 150 TV stations have already signed up for 'free Ku band terminal packages to be a part of RCA Ku-2 service launch. Satellite operator hopes to turn Ku-2 and 1 birds into heavy carriers of TV broadcast feeds and pre-feeds by 'salting earth' with as many as 800 free Ku band TVROs which stations would use to receive programs. Ku-2 scheduled for launch late this year.

CANADIAN French programming will be transmitted through ECS-1 bird starting in October and in exchange, French TV5 network



will gain space on Anik C3 satellite to broadcast 'French' programming from France to North American French speaking peoples. French originated programming, on C3, could build to as much as 8 hours per day by 1986.

US GOES 4 weather satellite is on loan to Europe, operating from 10 west, until replacement Meteosat bird can be launched.

JOINT US and USSR program entitled 'Peaceful Use of Space' will highlight 1985 IAF Congress meeting in Stockholm, Sweden October 7-12.

AT&T taking over Comsat operated 'gateway terminals' connecting to Intelsat system by 1988; Andover, Maine and (state of) Washington uplink centers will be closed before 1988 with work load shifting to California, West Virginia and Pennsylvania stations.

CANADIAN firm, 'Granville Resources,' promoting 1 meter C or Ku band terminal which they claim will operate in portable configuration from 12 volt cigarette lighter 'connection' in automobiles or trucks. Firm is looking for someone to manufacture system which they claim can be retailed for around \$1,000 (US).

GERMANY is thinking about locating their own EURO-DBS bird at 19 west as an 'alternative' to the Eutelsat plan to create a pair of 100 watt per transponder DBS birds in the late 80's.

EUTELSAT meanwhile is as concerned about 'where the programming will come from' as it is about the technical aspects of creating a European DBS 'platform' in space. Recent studies suggest that to program a single transponder 6 hours per day will cost upwards of \$190M per year in production costs. That works out to 3285 hours per year or \$58,000 per hour for 'original' programming. In spite of the considerable number of individual 'national' TV services operating via terrestrial TV in Europe, there is virtually no 'independent' TV production in Europe to support such a major expansion in programming appetites.

PTL joined the Galaxy gang in May by subleasing from HBO TR17. PTL will continue to use F3R's TR2 as well.

F3R deterioration continues with significant signal level losses on even the 8.5 watt transponders originally activated in December of 1981. Measured signal level 'losses' approach 3.5 dB for the worst of the transponders now in service, reference the original levels measured in early 1982.

USCI Chapter 11 filing showed firm ceased business owing nearly \$48M with 'assets' of less than \$9M.

DUTCH cable systems were pleased to see 'charges' leveled against Dutch government by European Economic Community 'board'; Dutch cable rules prohibit importation of any advertising supported television if the programming is 'spoken Dutch' or carries Dutch subtitles wherein the advertising 'comes across' in Dutch. EEC says that is contrary to European rules. Presently, English Skychannel service is at disadvantage in Holland because of Dutch 'rule.'

GTE G-Star bird has first customers for Ku band service; Bonneville Telecommunications using 54 MHz channel (previously using 36 MHz channel on Spacenet 1 bird), Vitalink Corporation and Isacomm will be the first 'up.'

UK government funding development of a single 30 GHz up and

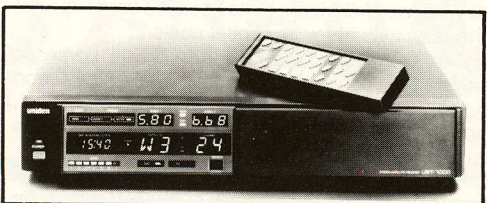
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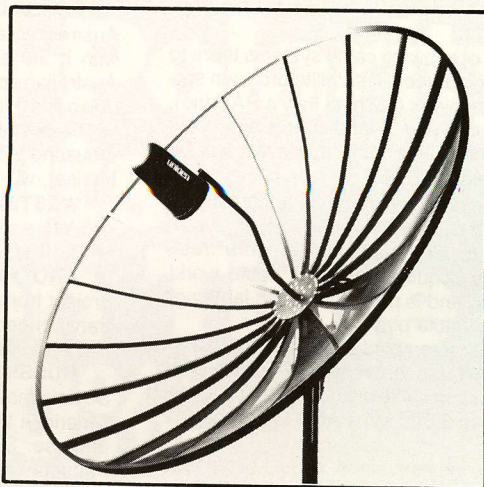
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20 GHz down 'test transponder' for possible future use in unnamed bird. Primary advantages of 30/20 bands are exceedingly small dish systems (under 12") and huge bandwidth capabilities (up to 500 megabits per second, nearly 10 times that of C band services).

RADIO SHACK plans for introduction of TVRO systems getting close to final form. Most likely scenario is for \$1995 system with 8.5 foot dish which will be 'buyer-installable.' BDC approach is apparent, with 'novel' two-microprocessor antenna controller which will 'assist' home-installer in initially finding satellite belt and individual satellites. Tandy will sell through independent Radio Shack dealers, located in rural areas or suburban shopping centers and through those Radio Shack owned and operated stores where space and traffic allow demonstration of TVRO capabilities. **September 15th** Radio Shack catalog will feature TVRO on front cover and be first 'formal introduction' to consumers of package.

FRENCH pay-TV operation, 'Canal-Plus,' having financial problems. Service tried to offer alternative to government operated programming, is now suffering because it outbid government for several major sporting events (at financial loss) causing government to 'retaliate' in kind.

USIA got budget for TVROs at foreign embassies slashed in final budget jockeying. They are not worried, claim they have unused funds from prior years to complete terminals in some 60 nations. Project involves several hours per day, distributed via Intelsat, for use by embassy staffs.

TED Turner may have competition in Europe; **Visnews**, out of England, plans European based 24 hour per day service to be distributed via ECS for cable use.

BELGIUM sorting out legalities of allowing cable systems there to use satellite delivered programming sources. If satellite program service is parallel-feed to national TV network (such as Italy's RAI Uno), Belgium cable may simply pick up and use. If feed is **non-broadcast** service, such as English Skychannel, individual approvals will be required after 'negotiation' with Belgium PTT.

SKYchannel is discontinuing its scrambling, much to pleasure of DBS interests in Europe. UK based service has been Oak encrypted from start but will now be 'free' to all. Descramblers were freely distributed to cable but difficult to acquire outside of cable world. Skychannel is advertiser supported and is primary English language TV service available in Europe for cable play.

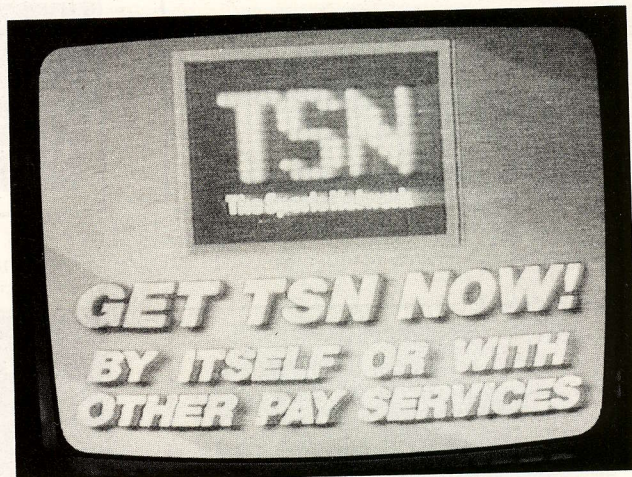
NEW CAMCOM TV offerings for scrambled distribution; **CHCH** in Hamilton, **CITV** in Edmonton, **CHAN** Vancouver and **CFTM** Montreal will be available as a part of the Cancom cable distribution package for cabled communities with fewer than 3,000 subs AND fewer than 12 channels of service.

MORELOS-A, first of Mexican domestic birds, should begin testing as you read this on both C and Ku band. Telstar 3-D (now scheduled at 125 west) and Arabsat (#2) also in launch sequence from Shuttle flight 51-G.

MORELOS-B is scheduled for launch in November along with RCA's first Ku band bird (Ku-2) and AUSSAT #2 bird.

FCC and AT&T compromised after AT&T wanted to shift Telstar 3-D from planned location at 127 west to 128.5 west. AT&T said that 128.5 west would help them better market services to cable and SMATV systems because 2.5 degree offset could be accommodated by multi-beam antennas or multi-beam feeds on parabolic dishes. Cable interests battled against proposed orbit change, sure that many cable dishes would have problems with 2.5 degree spacing. AT&T then decided it wanted to move **further away** from cable altogether and FCC approved 125 west location; some 2 degrees (!) from Westar 5 at 123 west.

INTERSPUTNIK birds, clustered at 14 west, 53 and 140 east, are likely to change operational characteristics in next two years. Birds primarily have northern hemisphere coverage although one or two transponders on each do have global coverage allowing use south of the equator. Next generation birds, with first now operational at 14 west, will have more transponders using global patterns and EIRPs in 30 dBw region. New (Gorizont class) birds will also have tighter flight patterns with less deviation from over-equator positions (typically ± 0.1 degree) to accommodate new 11 GHz packages on board and tighter (11 GHz) beamwidths of earth stations. Expansion to global patterns on more transponders apparently intended to enhance 'sale-



ability' of Intersputnik services to 'third world nations,' primarily in Africa but also in South America, as economic alternative to Intelsat. Base 'rate' for Intersputnik transponder use is about 1/3rd that of Intelsat for equivalent time periods. Higher transmit powers on Intersputnik, in addition, favors use of Gorizont birds because users can get by with smaller earth terminals at lower capital costs.

AUSSAT One, the first of the 11 GHz birds for the domestic Australian satellite system, is scheduled to launch late summer and with it the start of the TVRO industry in Australia. Unfortunately, Australian spot beam 4 GHz Intelsat coverage, now useful with dishes down to 12 feet in size in northern Australia and Papua New Guinea, will be phased out in favor of 11 GHz service by end of year. Several thousand **private** terminals, equipped for 4 GHz Australian service on Intelsat, will face upgrading to 11 GHz service heads.

WESTERN Union, still facing serious financial hurdles, wants to sell W4 and W5 birds and then lease them back from new owner. Move, if it happens, would give firm much needed cash to 'stay alive.'

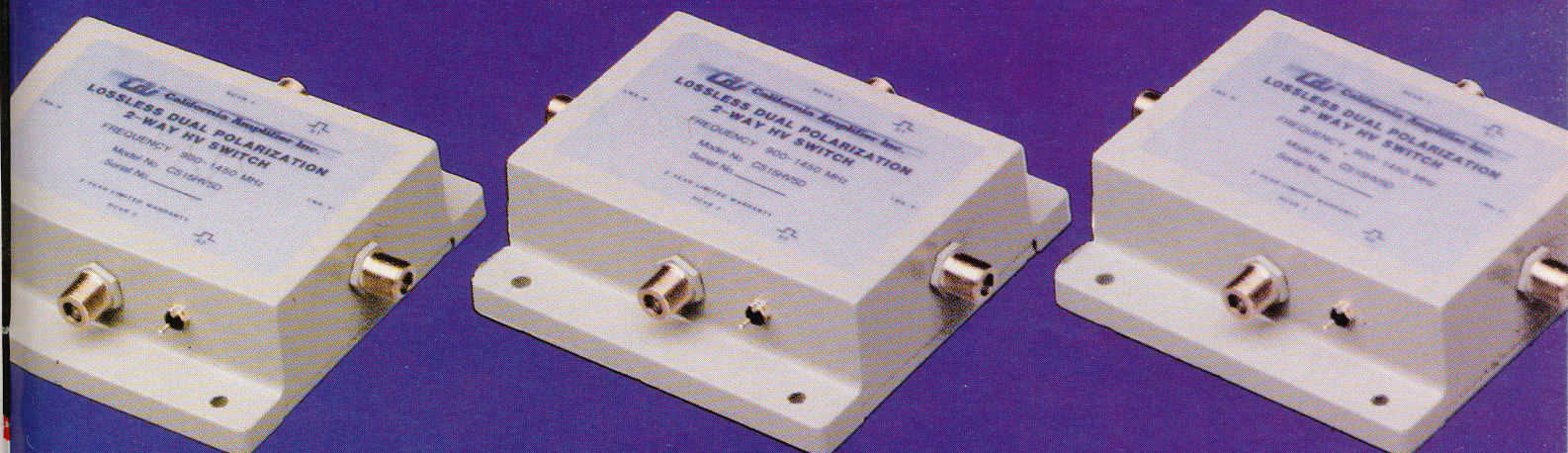
ANOTHER potential competitor to Ted Turner's CNN-European project from Belgium; World Public News proposing use of Belgium transponder from 6:30 AM to 6 PM European (standard) time for transmission of CNN-2 type news blocks.

RUSSIA now says it will use its own Gorizont satellites to link to Soviet embassies 'abroad' rather than French Eutelsat channel which American USIA is currently leasing several hours per day for same purpose. Soviets had originally talked with French about 'sharing' transponder with US for same equivalent purposes.

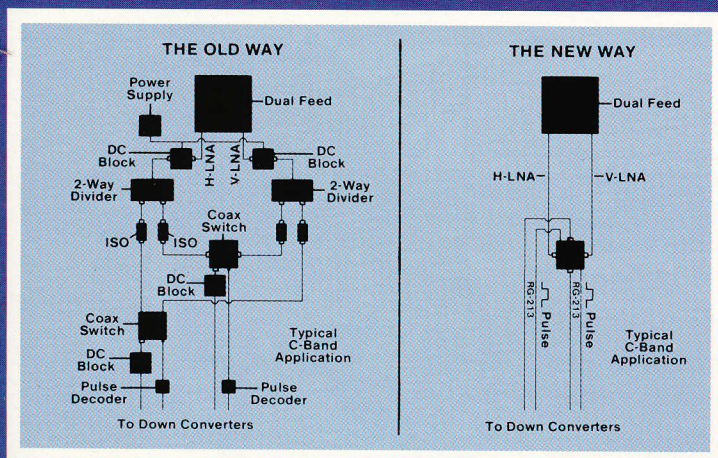
SKYchannel has launched 'Sky Text,' a news and program information (teletext) service operating within TV frame using dedicated lines like British Oracle and Ceefax services. European weather and road condition reports will be included.

CHRISTIAN Television Partnership (CTP) may be first England based satellite delivered 'religious channel.' Coverage of June appearance in UK of American evangelist Billy Graham was planned and after analysis of reaction to coverage, 1986 plan calls for regular daily programming schedule using satellite yet to be named.

WORLD Administrative Radio Conference (WARC), meeting in Nairobi, Kenya in August, will tackle new demands of underdeveloped third world countries for guaranteed access to geo-stationary (Clarke Orbit) belt. There are presently 13 nations in world with own operating domestic systems (Brazil being most recent added) and another 19 lease Intelsat capacity (**plus** Soviet bloc users). Smaller, lesser-developed nations fear that when they are financially able to afford own domestic systems, no orbit spaces will remain. Purpose of WARC is to satisfy demands of LDN's (lesser developed nations) while still providing usable growth room in space for those countries with larger budgets and more immediate needs. Under current system, anyone wishing to launch first files planned system engineering specs with Geneva based ITU which acts as international coordinating body. If there are no frequency or coverage or power conflicts, approval is automatic. Third world nations fear that if this procedure continues, in



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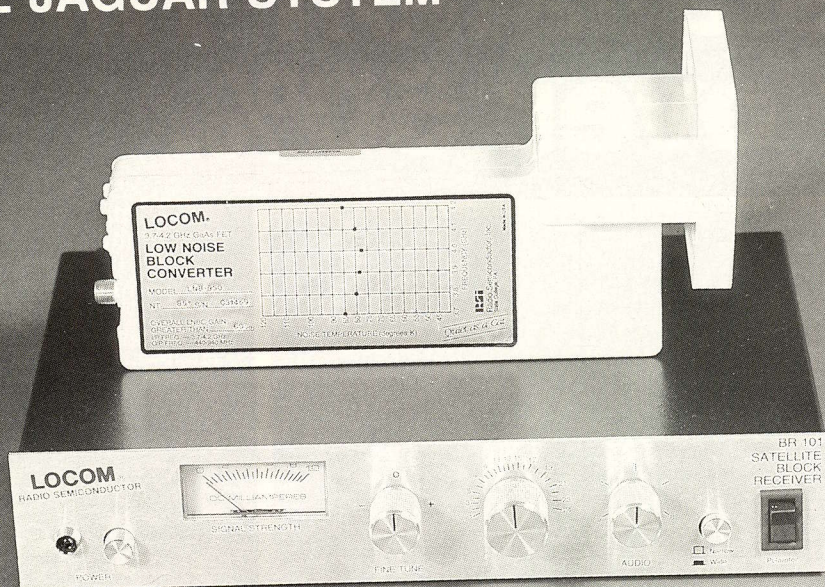
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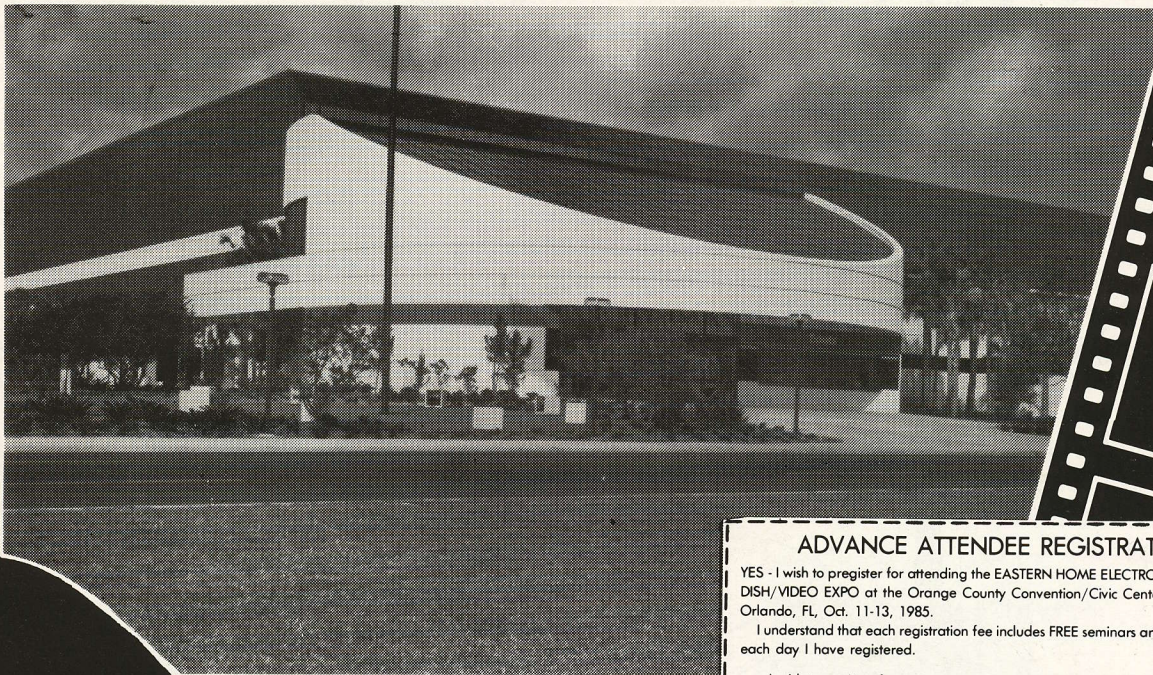
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TRANSPONDER WATCH/ continued from page 60

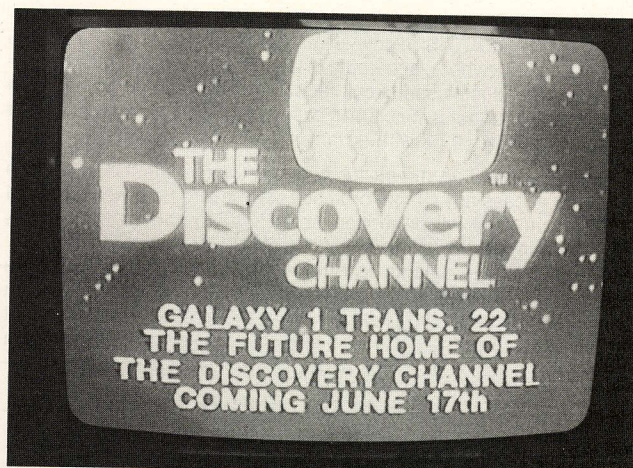
another ten years, **no orbit spots will remain** and many see themselves twenty years into the future before they can afford their own domestic systems. One possible 'relief valve' in all of this is opening up of new satellite frequency bands (such as 20 GHz down, 30 up) since satellites on different bands can occupy the same in-orbit locations without interference.

G-STAR 3 may be first operational 'L band' satellite for test of radio-determination system. RDSS proposal calls for precise 'fix' on terrestrial signal sources, using 1610-1626.5 MHz band, to within 'yards' of true location of signal source. Potential commercial customers would be trucking and boxcar haulers of freight; pinpointing location of semi-trailers and freight cars would improve efficiency of overland hauling industries. FCC must approve GTE Satellite request for test of L band service.

HUGHES says 'fall off in orders for new satellites' is reason it will **not open** satellite assembly plant in Titusville, Florida before 1990. Firm had originally planned 1986/87 opening to handle overflow of new satellite construction currently based in California. Hughes remains largest supplier of satellites in world.

\$1,000,000 fee is suggested for 'tourists' wishing to book a 3-day flight from Florida to California; **on the Shuttle**. Seattle firm is trying to convince NASA that it should go into the 'people-shuttle' business and claims it has list of potential travelers willing to pay \$1,000,000 for right to ride on people-missions.

TURNER test-demonstrated CNN in Europe by uplinking via Intelsat (V-F8) on C band into Europe off of Galaxy 1 feed. In Europe, French PTT took C band signal, ran it through NTSC to SECAM format transcoder and re-uplinked via 8 west Telecom 1 satellite for 11 GHz distribution. Cannes (France) reception was for public display to convention of European telecasters and potential operators of SMATV



systems in Europe.

BROOKS Satellite raised nearly \$4M by selling approximately 700,000 stock 'units' at over \$6 each. Units sold consisted of 2 shares of common stock plus one five-year-redeemable warrant good for an additional share of stock. Money is being used to expand Brooks ('The Satellite Store'™) store growth.

HILTON HOTELS will use S-A 3.2 meter or larger dishes to equip all Hilton-owned hotels with cable-programming and teleconference capability. Bonneville Telecommunications got job as contractor.

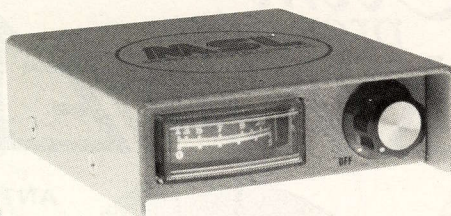
FCC wants to change to an 'auction format' for new satellite authorizations and has asked US Congress for legal right to convert from present first come-first served basis for granting permission to

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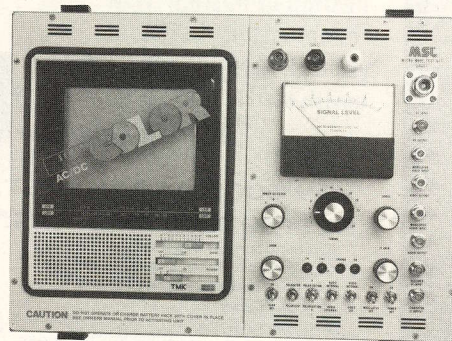
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launch satellites to new 'highest bidder' approach.

HAGLER-HEARNS middleweight championship fight was 100% encrypted, everywhere, according to service provider VideoStar Connections. Previous closed circuit feeds have maintained at least one 'in clear' transponder as backup in case of failures at key descrambler sites. This one went off with no ground failures according to firm.

S-A has modified mount for new 2.8 meter antenna system to allow it to access any Clarke orbit belt bird between 59 west and 144 west. The antenna with motorized mount has list price of \$1,900 and is intended primarily for commercial market.

BATTLE of the 'ratings' in Europe with satellite fed competitive services. Skychannel's 'Sky-Trax' program claims that in Dutch homes where competitor MusicBox is available, Sky Trax beats out MusicBox by a 2 to 1 to 3 to 1 ratio in homes-tuned-in. MusicBox is an MTV-like channel while Sky Trax is program 'segment' on Skychannel, not unlike WTBS 'Night Tracks.'

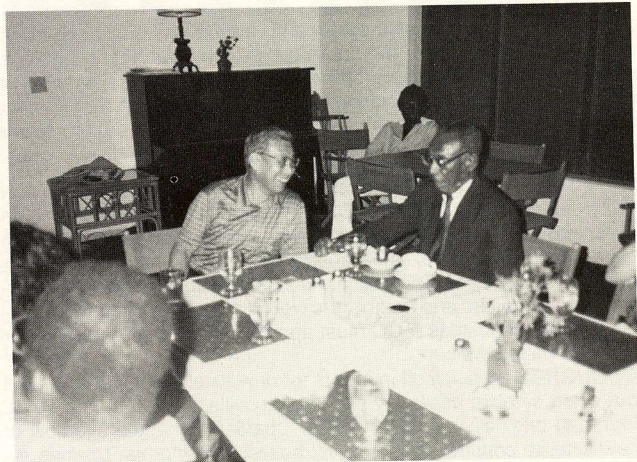
RCA Ku-1 and 2 satellites have settled on 45 watts per transponder after original 20 watt power level plan, and interim 40 watt per transponder plan. Ku-2 scheduled for mid-fall launch.

USA Today newspaper now has 27 satellite-connected printing plants in operation; most recent is at Miramar, Florida.

WESTERN Union wants to place **W6-S** (replacement) bird at 91 west to replace W3, moving W3 to 78.5 west to function as occasional use in-orbit spare until it runs out of fuel. W-6-S will have 24 transponders and will supplement W4 at 99 west and W5 at 123 west.

JULY 16 to 24 has been designated 'SPACEWEEK 85' because it marks the 16th anniversary of the first American landing on the moon. TVRO dealers can get some extra mileage out of the national celebrations planned by tying in local advertising and promotional events to the schedule. Dealers should contact **Ken Randle**, 1753 Mill Creek Circle, Salt Lake City, Utah (84106) or write **Spaceweek National Headquarters**, P.O. Box 58172, Houston, Texas 77258 to coordinate local events to the national celebration. **July 20th** has been proclaimed 'Space Exploration Day' by President Reagan.

COOP COMMENTS/ continued from page 5



DINNER TALK/ Doctor Konishi with Turks and Caicos Chief Minister Francis at our 'state dinner' for the Konishi family. **CM Francis** recalled how, as a boy, he first learned of Japan. "If we would dive and collect 25 Conch Shells, we could trade the Conch for a pair of Japanese made shoes" **he remembered** "and I have always admired the incredible ingenuity of the Japanese."

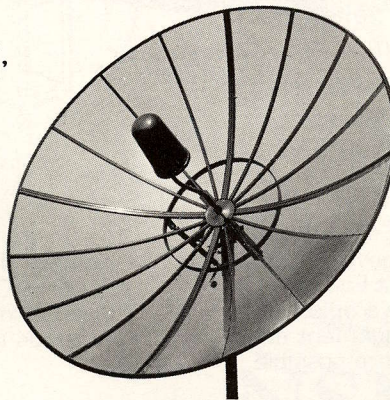
for futurist (Doctor) **Arthur C. Clarke**, we stopped in Japan for five days to visit some of the 4 and 12 GHz labs and manufacturers headquartered there. One of those stops was a 'new' company just getting into the TVRO hardware business; virtually no one had heard of 'Uniden' before we arrived and we were intrigued by their invitation to spend a day meeting with their engineers and touring their facility.

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When the invitation came in, I was quick to accept because 'a' Doctor Yoshihiro Konishi had just been named as the new satellite firm's President.

It is very unusual, in Japan, for a prominent scientist such as Doctor Konishi, working for all of his professional years for the prestigious NHK network, to suddenly 'change jobs' at the age of 56. When the person 'changing jobs' was none other than **(The) Doctor Konishi**, that was especially significant. In fact, it is virtually unheard of in Japan.

Arthur C. Clarke calls Doctor Konishi **'Mr. 12 Gig-A-Hertz.'** When we were in Sri Lanka with the doctor in the fall of '83, before Uniden had a production model satellite receiver, Doctor Konishi spent several hours explaining how 'his TVRO receiver would be different than other TVRO receivers.' The 'Konishi' 4 GHz receiver would have some 'unusual' video processing circuits and it would make 'better use' of FM 'limiting circuits.' The first models, the UST 1000 and 3000 units, would later appear in the US and other than some late developing problems (since corrected) with channel selection switches, they would turn out to be 'adequate performing' if not outstanding pieces of TVRO hardware. However, the 1000 and 3000 series units had actually begun their design life **before** Doctor Konishi came on board at Uniden and the first 'real' TVRO receivers from Doctor Konishi would turn out to be the 5000/6000/7000 units. Thus it would be nearly 18 months after we first met Doctor Konishi, in Tokyo, that we would finally have the opportunity to 'rate' **his work** against other competitive circuits.

This spring a 'time window' opened which suggested to Doctor Konishi and I that he might be able to 'repay' our family visit to Tokyo with a visit by he and members of his family to Provo. I was delighted when all of the final confirmations fell into place; Doctor Konishi, Mrs. **Yoriko Konishi** and daughter **Yumiko Konishi** would be able to fit in a 'short visit' to Provo early in June. They would meet me in Miami on a



KONISHI FAMILY AT SEA/ Zipping along at a comfortable 40 miles per hour, Yumiko Konishi (left/front) and Shari Foiles (right/front), WIV's Marshall Foiles 'at the wheel' with Mrs. Yoriko Konishi behind Shari, and then Doctor Konishi in the stern.

Friday and we would fly to Providenciales together and then be returning on Monday; a **'weekend on Provo.'**

It would be a busy weekend. With the able assistance of Marshall and Shari Foiles who watch over WIV when nobody with the last name of Cooper is 'in the islands,' we arranged a 'state reception' for the Konishi family. A country with 7,000 population is certainly not able to muster up the same sort of pomp and ceremony as one with

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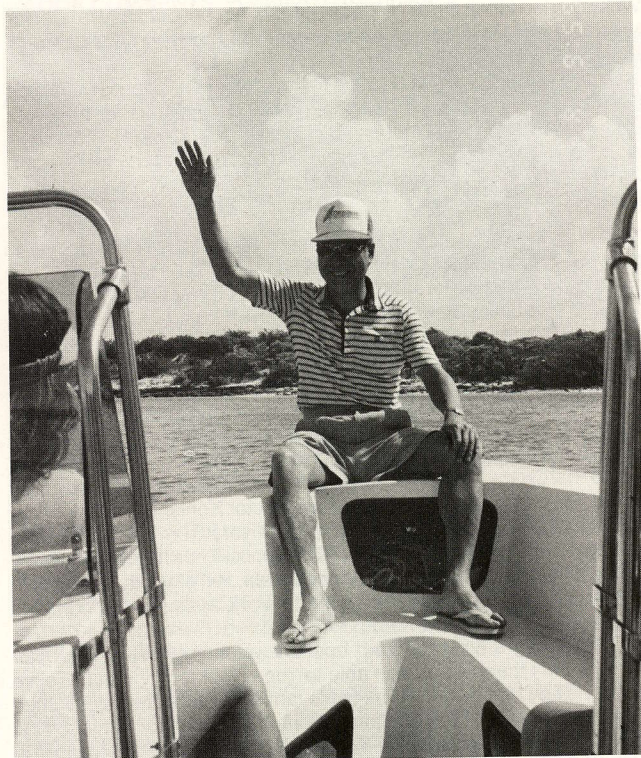
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100,000,000 but we would try. First, 'diplomatic recognition' of Doctor Konishi at customs and immigration. We were met at the airplane by government representatives who took us through a special handling ceremony and sent us on our way without the usual hassles of customs and immigration. A nice touch. I would later learn that according to the Turks and Caicos records, this was the **first Japanese family to ever visit** our islands.

After an appropriate tour of the Grace Bay WIV facility, where we turned the house over to the Konishi family, they did what any tourist family would do; they went swimming in the Caribbean. That night, a 'state dinner' with our recently appointed **Chief Minister N.J.S. Francis** on hand to welcome Doctor Konishi and sit with him through dinner to acquaint the two cultures.

It would turn out that Mrs. Konishi and daughter Yumiko would be returning to Miami the very next day since they had appointments in New York City on Sunday. The doctor would stay on, with me, until Monday. So Saturday morning Marshall broke out son Kevin's boat and we headed out to sea for a leisurely tour of Provo-by-sea and then some of the smaller, uninhabited, nearby islands. The Konishi's could not get over how lightly populated our country is and how totally unspoiled by the hand of man the tens of miles of deserted beaches remain. We got to talking about property values (everyone who visits on Provo does that!). I learned that an acre of ground, in a **residential area** close to (but not within) Tokyo runs at around \$3,000,000. Japan of course is not only quite small, but the percentage of usable land is but a tiny fraction of the land mass available. Thus it is priced at levels which seem incomprehensible to most of us. Marshall immediately began scheming how he could move an acre of Provo land to Japan for re-sale. He's still working on it.

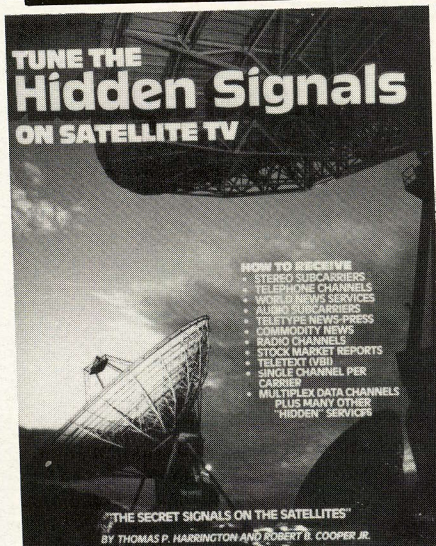
With Mrs. Konishi and Yumiko safely on an airplane bound back to the states, the Doctor and I went to work. We had several objectives; in the TV studio we were going to record some dialogue between the two of us which would provide 'continuity' for a Uniden videotape to be released this fall. Outside the studio, we had a pair of installations to visit. Both had begun as total-Uniden systems, using block receivers (several) with a Uniden 10.7 antenna. Marshall had spent an agoniz-



DOCTOR KONISHI AT SEA/ riding in the bow so he could snap 'the best pictures,' Uniden's Doctor Yoshihiro Konishi waves to the 'TVRO world' from a remote spot called 'Water Cay' in the Turks and Caicos.

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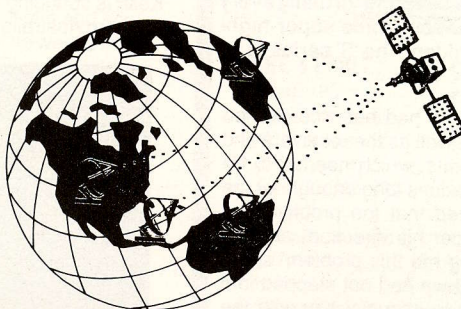
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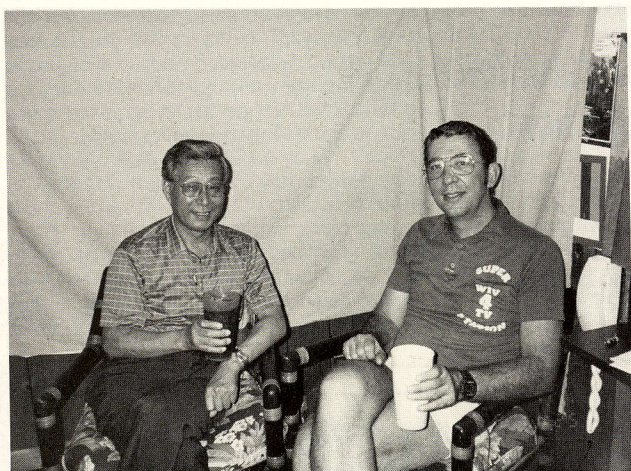


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ing week trying to sort out some design problems he spotted while assembling and installing the two antennas and we wanted Doctor Konishi to visit both installations and 'critique' the assembly of antennas and witness their performance in a side by side comparison with some other (competitive brand) antennas. I went along on this exercise and videotaped the doctor and Marshall inspecting the antennas and talking out the problems Marshall had spotted.

Marshall and I were both quite apprehensive about sharing the antenna 'problems' we had spotted, with Doctor Konishi. As President of Uniden Satellite, we felt he had a right, even an obligation, to know about these problems. But we were running the risk that his reaction might **not be**, well . . . , '**understanding**.' Additionally, I didn't feel **we** were really qualified to critique a product that had his name associated with it. It turned out great; Marshall had side by side comparisons set up for equivalent size antennas and in just a matter of moments we knew that Doctor Konishi had no problem with our critique nor our method of comparison. That afternoon, he and Marshall sat down and went over a list of changes which we felt would make the Uniden antennas **more dealer friendly** as well as better performing. Even before you read this, Doctor Konishi would be very involved in his firm's antenna products (perhaps for the first time) and some significant changes are promised (1).



BREAK FROM THE TV LIGHTS/ The doctor and I cool off for a few minutes while Marshall resets some TV cameras in the studio during our marathon taping of a dialogue covering virtually every aspect of future TVRO receiver designs. Yes, some super-high-tech TVRO receivers are coming from Uniden. The 'S' series to be specific.

Doctor Konishi would later tell us that he had been concerned about why the antennas were not selling as well as the receivers and he had been told about several 'weak points' which needed to be changed. He lingered at the two test installations long enough for me to realize that he was genuinely concerned that the problems be identified, understood and then fixed (under his direction) and his frequently repeated 'thank you for showing me this problem' statements put Marshall and I both at ease that we had not stepped into some quicksand with our 'boldness' to try to acquaint him with the problems.

It was a very busy three day weekend and as we release some edited excerpts of his dialogues with Marshall and I during August on BORESIGHT(*), I think you will agree that this man totally deserves to be called 'Mr. 12 Gig-A-Hertz' at the very least.

1/ In fact, improvements to three key problem areas shown to Doctor Konishi appeared on antennas shipped only days after he left Provo, **greatly improving** the assembly and performance of the antennas.

*/ Boresight, Thursdays, 9 PM eastern, F4, TR20.

HIGH TECH in S.D.???

Quiz. Where, in the United States, do you find innovative, high technology electronic gear being designed and produced? California? Ok. Massachusetts? Ok. But South Dakota? No way!

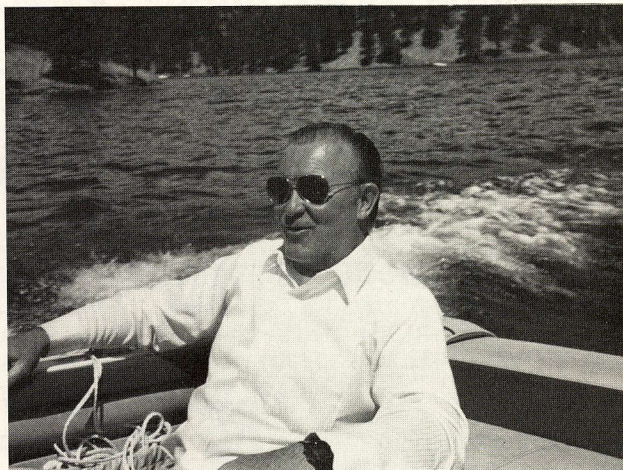
Wrong. **Keith Anderson** was designing some pretty amazing high tech solid-state VHF/UHF/microwave equipment in South Dakota long before there was a firm called Anderson Scientific. In fact, Keith began designing **solid state** VHF transmitter equipment in 1959. You will have to scratch mighty deep to find anyone, anyplace, who did it any earlier. In fact, Keith Anderson designed and built the first all-solid-state 'TV translator' several years before solid state transistors generally became available. I met Keith in 1960 and have been in touch with this amazing fellow on and off ever since.

In late April, finding myself with an extra three days open and nothing really pressing, I decided to fulfill a promise I had made to Keith Anderson more than 25 years prior. I would **revisit** him at his home in South Dakota. You see, I never forget an invitation to visit someone. I may be slow to accept, but sooner or later, I get there.

When I last visited Keith, he hauled me around in a small, single engine airplane and we visited some ranchers in rural Montana who were receiving their only channel of television through a 'string' or 'tandem series' of VHF translators built by Keith. It was pretty amazing, in those days, to set down on a rough, dirt strip in the middle of Montana where the only evidence of civilization was a herd of sheep grazing on a hillside. And then to have a fellow ride up on a horse and ask you if you 'wanted a lift' to the 'ranch house', which happened to be on the other side of the hill. Once there, it was even more amazing to see a television set playing with a single channel of TV, relayed 15-30 miles at a time from translator to translator to finally arrive at this barren outpost for humanity. Keith had lots of those translator strings in those days and while they usually didn't serve very many TV sets, the people that depended upon Keith for their TV treated him very well whenever he dropped by.

Keith Anderson pioneered 'deep-deep' fringe television in North America. First he built big antennas and put them on hilltops. When big antennas would no longer bring in a signal, he 'relayed' the signal from hilltop to hilltop using his solar or even wind-powered translator gadgets. He didn't bother to apply for an FCC license to (re) broadcast TV in those days because the FCC wouldn't grant such a license anyhow. Keith taught hundreds, no thousands, of others to do the same thing in the 50s and early 60s. But eventually he got so good at what he was doing that the Federal Communications Commission 'took notice' and they set out to close down the 'booster' or 'translator' stations.

I wanted to document all of this, and more, on videotape since Keith is spending more and more of his mental, and physical, time in northern Australia these days. As much as I like to travel, I would much



KEITH ANDERSON is spending more and more of his time in Australia these days; but he usually flies there rather than taking a boat.



AUGUST ANDERSON has a special plan of her own; to ride for the USA in the 1988 Olympics (**BORESIGHT**, June 13th).

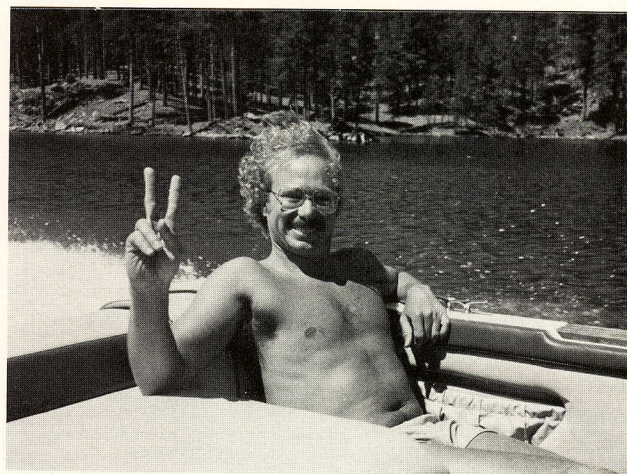
rather go to South Dakota than to the wilds of Australia to catch up with him. And viewers of our **BORESIGHT** program segments (1) during the period starting June 13th will have, by now, 'been to South Dakota' where we spent several consecutive programs visiting first with Keith's daughter **August** (June 13th on **BORESIGHT**), Keith and son **Mark** (June 20th), and then Keith again on two consecutive weeks that terminate just as you are reading this. The 'Anderson Clan' has quite an unusual operation in South Dakota.

Three of Keith's children run Anderson Scientific. August handles marketing, **Alan** handles production and Mark handles the presidency spot and keeps everyone 'in line'. Keith? He spends most of his time 'at the ranch' where his pristine workshop allows him to 'putter around' creating new and innovative gadgets.

For example, there was the Saturday afternoon we piled into his motor home and took a drive. As we **drove along**, we watched satellite television. From Galaxy. There is something quite eerie about driving 55 miles an hour down a highway and casually switching between The Nashville Network, Disney, WTBS and The Movie Channel. Yes, there was a satellite dish on the back of the motor home. **No**, we didn't even have it hooked up. So how does Keith watch 'live' satellite television in a **moving** motor home? Ingeniously, as you probably decided for yourself if you caught our **BORESIGHT** video report on June 20th.

Or there was the 'shirt pocket' TVRO receiver barely larger in dimension than my American Express card. Keith hooked it up to a 4 foot dish and we watched excellent pictures. Mark told me that as soon

1/ **BORESIGHT**, airs weekly on Thursdays at 9PM eastern time, F4, TR20.

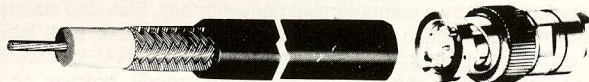


MARK ANDERSON has turned Keith's workshop creations into one of the most innovative TVRO product lines still built in America.

as they can figure out how to put it into a housing that doesn't make it much bigger than the raw 'chassis', they will probably put it into production. The size is not the only thing that is small; the price will cause heart murmurs in Tokyo I suspect. And those who tuned in our **BORESIGHT** report on June 27th saw our introduction to this bit of Anderson 'wizardry'.

Or, there was the **\$5 TVRO antenna** that began its 'high tech life' as a 4 foot square piece of aluminum sheet. Keith showed me how to do some magic with the raw aluminum to make a two foot antenna in about 15 minutes time. **'Two feet!'** you exclaim; **that's not good for anything!**

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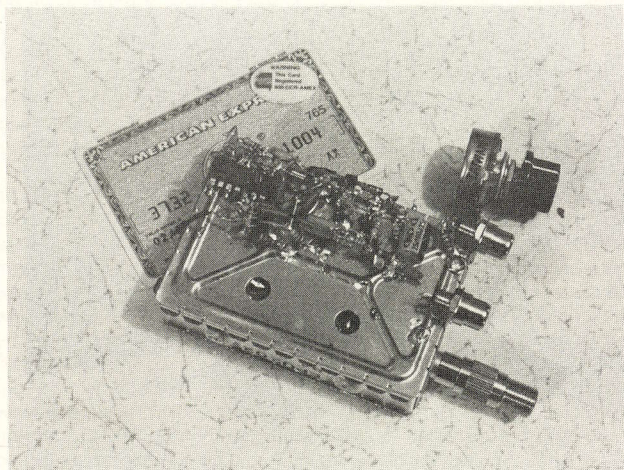
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SHIRT POCKET receiver, barely larger in width and length than a credit card, is likely to pull the rug on low-cost Far Eastern receivers.

That's what I thought until Keith hooked up his shirt-pocket sized receiver to its output flange and tuned in some pictures. They were better than I saw on the plains of Montana 25 years ago when Keith took me to visit a rancher in his airplane, and as Keith **demonstrated** on BORESIGHT June 27th, "If this was the **only TV** you could receive and **you had just a few dollars** to spend to get TV, you wouldn't find it **that objectionable**". A two foot antenna and a receiver that fits into your pocket? I upgraded my estimate of the 'heart murmur' in Tokyo; **now we were talking a full-scale 'coronary'**.

It would turn out that after I left three fantastic days with the Anderson Clan in Rapid City, I would be visiting in Camarillo, California with **Jacob Inbar** and staff at **California Amplifier**. It was a tough adjustment; from the jeans and sandal atmosphere at Anderson Scientific to the three-piece business-suits and talk of 'grey market Mercedes' at California Amplifier. The comparisons were inevitable; at Anderson around 100 guys and gals, typically in their early 20s, sat on 'bar stools' waving their Unger irons at circuit boards stacked up in cardboard boxes. A local rock station blared throughout the assembly area and everyone had a smile and a bright, cheery attitude.

At California Amplifier I saw nearly 300 people grinding away at work stations 'fed' by a computerized conveyor belt. Elevated stands allowed management to get above the production floor and 'look down' on the employees. The long lines of LNBs and LNAs for clients such as Janeil and Long's Electronics were orderly, precise, and



ANDERSON SCIENTIFIC production line averages low 20s in age with a fair split between male and female. Shorts, jeans and sandals are the local 'dress code'.

everything moved with a slip of documentation paper attached. One fellow, a VP in management, was in the middle of a compulsory multi-week stint assembling products on the floor. I was told that this was a regular part of the company policy; **management people** had to spend a week or two or three, once or twice a year, **building units** on the floor. That is supposed to keep their mind 'focused' on what high tech microwave electronics is really all about; the nitty-gritty of microscopic parts and ultra-precision placement of those parts on precision etched circuit boards.

I shot videotape at California Amplifier as well. But I haven't figured out what to with it, **yet**.

Leaving South Dakota, I was already 're-running' the six hours' of raw tape shot there in my mind; before I would arrive in Los Angeles, I would have most of my BORESIGHT 'pieces' covering the Andersons already outlined mentally. But leaving Camarillo, I couldn't find a 'focus' for a video report on California Amplifier. I've run the tape four times now on a monitor and although I have several concepts for making it tell a story, I am not happy with any of them. When I finally find the 'right thrust', you'll see it on BORESIGHT.

So the next time somebody suggests to you that certain areas of the country, or world, have a corner on 'high tech electronics', I suggest you remember the Andersons in South Dakota. They are exceptional, **but hardly unique**. And they serve to remind us all that **TVRO began** in rural America, in small labs such as that Keith works in, because people didn't have TV and they wanted some. There is a critical 'human element' here which I question can be duplicated in Tokyo or even Camarillo. And for that reason, there will be "Anderson" type people in our industry for as long as there are innovative things to be done in TVRO.

NEWSWEEK Not 'News'

The May 27th edition of **NEWSWEEK** devoted a page to the growth of TVRO and the 'problems' we are creating for cable network operators. They did us an injustice on one count and overlooked a key element in the cable vs. TVRO wars on another.

Most insulting of all was the headline ("**Fighting Backyard Pirates**"). While the body of the report did explain that TVRO was legal, drawing on the adoption last October of legislation by the U.S. Congress, the direction of the story supports the headline and it will be the headline which lingers in consumer minds long after the well buried explanation of legalization of TVRO has passed. I don't usually sit down and fire off 'letters to the editor' but I did in this case.

In my letter I pointed out that when I first installed a TVRO in 1976, I was told I was a 'pirate'. I also pointed out that neither I nor any of the 1,000,000 plus who bought TVROs after me were ever guilty of 'piracy' because we were breaking no laws. I noted that the 1984 law **re-affirmed our right** to view unscrambled signals and this law had the backing of our industry trade association because as our numbers grew, we as a sub-group became increasingly incensed at being called pirates.

My letter also pointed out that the writers of the report missed the real bone of contention between cable and TVRO; that **1 home in 4** buying TVRO has direct access if they wish it to local cable service and that 1 home in 2, of these cable-available TVRO owners, has opted to cancel their cable subscription in favor of TVRO. As I pointed out here last month (**June 01 CSD**), cable operators are angry because every cancellation of cable not only reduces their monthly cash flow, it also reduces their 'book value' by approximately \$1,000. This works because on the cable 're-sale market' each home subscribing to cable can net to the cable system owner roughly \$1,000 in a sale of system assets.

In spite of these inaccuracies in **NEWSWEEK**, the story is not very far 'off mark' in reporting on the growing hostility between cable and TVRO. And this points up the depth of our number one problem within the industry today; **how do we cope with an organized force such as cable** which is dedicated to plowing us under?

Cable's resources can outman and outshoot us at every turn. Cable operators are well organized through state, regional and national trade associations. Cable's contacts within Congress are far more developed than ours. Cable's PR machine is funded with a budget that is larger than our total trade association budget. Their legal budget has diminished greatly in recent years since they have gotten most of what they need and want from Congress; but it remains larger than our

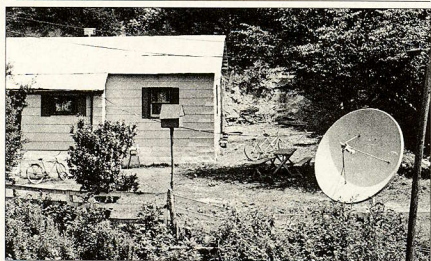
own legal budget none the less. Cable spreads the legal responsibilities around amongst both in-house and corporate-member attorneys while we place all of our legal eggs in a single basket. Simply put, there are strong forces out there conniving to do-us-in and we had better recognize the maturity and abilities of 'this enemy' before it is too late.

We have a soft underbelly; when retail level sales falter and slow down, the industry cash flow knee-jerk reacts instantly. The best way to get our knees to jerk is to hit us where it hurts the most. And launching a PR campaign to 'caution consumers against buying TVRO' is a very effective weapon. We've witnessed what happens when this course of action is followed and to date we have been all but helpless to react in an **organized** fashion.

SPACE trotted out a PR firm last March in Vegas. They told us all of their skills and strengths and promised to help us deal with attacks on our industry by cable. To date we have seen virtually nothing from their efforts and what we have seen has been largely grandstanding designed to make SPACE and their PR firm 'look good'; not to actually turn around a problem we have.

We can beat this one but it is going to take far more effort and far more cooperation than we have had to date. Do you remember **Jeff Manion** in Wichita? Jeff was the guy hauled into court by a Wichita cable system when his retailing of TVROs got under the skin of the cable system. This was the **Starlink** case. Jeff won in court, largely because of the adoption in 1984 of federal legislation re-affirming TVRO's legitimacy. While Jeff was in court, his retail business ground to a halt; local press kept up a running report on the events and consumers stayed away from Starlink rather than chance buying a terminal that might later be ruled illegal. Well, after Jeff won (with SPACE's assistance), he shifted back to high gear. His retail business has grown and grown; he has retail outlets all over the Wichita area now and is doing exceptionally well, even in what others perceive as a 'soft market'.

TELEVISION



Satellite antenna in Kentucky: As the dishes multiply, so does the dispute

Fighting Backyard 'Pirates'

Along with a voracious appetite, the American viewer seems to possess a sense of entitlement (he might even call it an inalienable right) to help himself to everything in sight. Consider the owners of backyard earth stations, those dish-shaped antenna contraptions that have sprouted alongside more than 1 million U.S. homes. By snatching broadcast signals off the two dozen communications satellites hovering above the earth, such videophiles can freely feast in the course of a week on no fewer than 2,500 cable news, information and variety programs, nearly 500 sports shows and some 250 movies.

Now pay-cable programmers are developing their own Star Wars technology to put an end to the free buffet—a counterplay that not only is generating static all the way to Congress but one that could eventually affect how tomorrow's TV gets delivered. Home Box Office, the nation's largest pay-TV service, will begin "scrambling" its satellite transmissions sometime next fall. From that point on, only dish owners who subscribe to HBO and purchase expensive (\$395) decoding devices will be able to watch clear pictures of its programs. At least a dozen other cable services, including Showtime, ESPN and The Disney Channel, are considering encrypting crackdowns of their own. Explaining his company's decision, HBO senior vice president Larry Carlson estimates that unauthorized earth-station receptions are costing the firm more than \$700 million a year in potential revenue. "That's not peanuts," says Carlson. "Piracy is a big problem for us."

The backyard "pirates" problem has been brought home by the remarkable growth of the satellite-dish industry. Five years ago sales of such devices were confined to families living in remote rural areas bypassed by

cable systems. Gradually, however, technological advances reduced the dishes' price tags from as high as \$35,000 to as low as \$1,000. Franchise dealers are now selling new ones at the rate of 40,000 a month, many of them to suburbanites for whom bragging about satellite bootlegging has become cocktail-party conversation. Nor is the cable industry alone in its concern. Since all three networks use the satellites to transmit programs to their affiliate stations, so-called signal pirates can enjoy commercial-free showings of everything from "Good Morning America" to "Saturday Night Live." They can also gleefully intercept the net-

works' "raw feeds"—unedited material not intended for public consumption. During political conventions, for example, earth-station voyeurs have been treated to worm's-eye views of network correspondents chewing out cameramen or sounding off about not getting enough air time. As their ranks have burgeoned, dish owners have begun flexing muscle in Washington. Prodded by SPACE, the industry's lobbying group, Congress passed legislation last year that, in effect, legalized the sale and use of backyard receivers. Currently pending is another bill that would declare a two-year moratorium on scrambling while rules for reasonably priced access to satellite offerings can be worked out. Unregulated scrambling, says congressional staffer Marc Williams, could leave people "sitting out there with a dish but who can get nothing but 'I Love Lucy' reruns."

Early Boosters: Even if decoders become requisite accoutrements, the home-satellite industry should continue to flourish. Chuck Hewitt, executive director of SPACE, predicts that the potential market for dish antennas will approach 50 million households by 1990. Even more optimistic visionaries are convinced that direct, satellite-to-home transmissions will eventually replace the cable wire as America's preferred video-delivery system. Of course that's exactly what some of cable TV's early boosters said about its own impact on conventional broadcasting—a prophecy that has proven decidedly chimeric. All that's certain is that both the cable services and the networks are suddenly confronting a potentially revolutionary twist on the philosophy of home rule: the belief that everything going on above one's roof is up for grabs in the backyard.

HARRY F. WATERS with JANET HUCK in Los Angeles and BOB COHN in Washington

NBC Tries Another Magazine Show

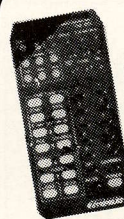
Few exercises in television futility can match NBC's endeavors to develop a successful prime-time magazine show: the network has launched and aborted no fewer than 10 such series over the past 16 years. That casualty list, however, has not deterred NBC News president Lawrence K. Grossman, who last week announced yet another attempt to confront the formidable challenge of CBS' "60 Minutes" and ABC's "20/20." To be titled "American Almanac" and anchored by Roger Mudd, the hour-long program will debut in August on a monthly basis with a planned switch to a weekly time slot next January.

Grossman, who took over NBC's news division just a year ago, promises that "Al-

manac" will offer a distinctive alternative to its two rivals. The series will originate live segments from outside the Washington studio, review the news of the past week with a major "cover story" and use guest experts to report on subjects of their choosing (former U.N. Ambassador Jeane Kirkpatrick, perhaps, on ocean treaties or Joanne Woodward on gardening). "At this point there is no vehicle in commercial television for outside contributors to do interesting things," explains Grossman, who cautiously adds: "We don't expect too much in terms of audience right away." Of course that hardly means he isn't betting that the 11th toss of the dice will finally turn up lucky for snake-eyed NBC.



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Jeff's success suggests that once the scrambling issue and the legality issue are dealt with, head-on and handled, retail sales activity will bounce back with renewed vigor. What we need to repeat **nation-wide** is the success of Jeff Manion. This can only happen when we as an industry forget our petty competitive differences and our intra-mural squabbling long enough to recognize that as long as we stand **alone**, we are easy targets for cable advocates.

Every state needs to work to form a state trade association; now. Where practical, state trade associations need to then form regional trade associations. We need all of this because we must have improved communications between dealers and between distributors who share the same local and regional problems. People who don't meet to talk out their common problems will never solve their common problems. It is just as simple as that.

VISIT From 'Bo'

I first met **Bo Lindqvist** of Luxor back at the Atlanta show in the fall of 1982. Bo was on hand with a new receiver which his firm was under contract to build for STS in Missouri. This was the industry's first opportunity to see and touch and play with a 'consumer friendly' TVRO receiver. **Luxor did it first**, and they also brought a touch of 'European Class' to the TVRO act. We would never be the same.

Bo is a person I identify with. A few years my junior, he and I grew up with the same interests and many of the same spare time activities even if we were pursuing them 8,000 miles apart. Bo became interested in VHF/UHF and microwave communications as a youngster. Licensed as a 'ham radio operator,' he tinkered with radio circuits while his compatriots were chasing girls or whatever it is that Swedish male teenagers did in those days.

Last fall when I visited the Luxor plant in Sweden and was treated exceptionally well by Bo and others at Luxor, I came to know him better and we discovered that we had even more in common. I asked him to return my visit to Sweden by bringing his wife to visit me in the Turks and Caicos Islands. That is the sort of thing you are apt to say given the circumstances and Bo smiled and said **"Yes, I would like that very much."** I doubt he guessed how soon that would happen.

This winter as I was researching and putting the final touches on our **'1986 TVRO Handbook,'** I made a decision that would ultimately affect Bo. Looking at the complex nature of TVRO system designs, and agonizing about the shortage of quality training materials available to technicians and engineers in our industry, I decided that we would also produce, simultaneous with the '1986 TVRO Handbook,' a series of professional training tapes. One of the tape-topics would be **'Basic BDC Installation and Repair.'** I pondered who, in our industry, had the best credentials to 'teach' or 'tutor' this course. Bo was my selection. The 'trick' was that Bo was in Sweden and I was in the Turks and Caicos Islands. That turned out to be no trick at all.

An invitation to Bo, via **Hans Giner** at **Luxor North America**, was quickly accepted and so in April, immediately following the Las Vegas STTI/SPACE show, Bo and wife **Kathryn** flew from Sweden to Miami and then on to Provo with me. It would turn out to be an exceptionally enjoyable week for all concerned. Prior to Bo's arrival, **Haden McCullough** of McCullough Communications had spent nine days on Provo with me (the schedule called for seven; Haden was reluctant to leave!) doing a similar set of tapes dealing with 'single and double conversion-receiver techniques.' And after Bo, **Doctor Konishi**, President of Uniden Satellite would also travel down to Providenciales for a shot in front of our WIV television cameras for another production scheduled for fall release.

Coming to Provo to undertake a schedule of television 'shooting' is no picnic, so we do our best to make it as enjoyable as possible. Bo and Kathryn, being cosmopolitan European, had no difficulty with the 'Club Medders' who have turned our beach into a 'back lot from an X-Rated movie set.' But they were 'forced' to eat local foods such as Papaya, watermelon, fresh scale fish and lobster for seven days straight. They also had to put up with the 85 degree temperatures and bright Caribbean sunshine on our white, sandy beach. Bo kept calling Sweden to see if they needed him (they did) and he always signed off with a 'local' weather report. They returned the 'favor' by telling him it was snowing. Neither Bo nor Kathryn were anxious to return to Sweden even though they had left their home and children behind.

We tried to schedule 'outdoor shooting' for the mornings, since

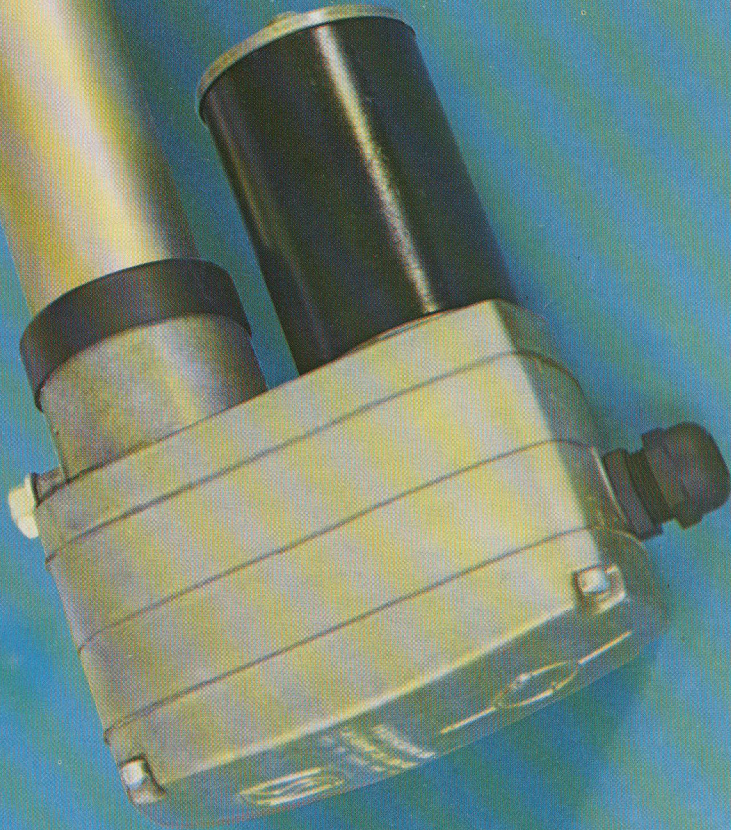
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Bo (right) and Marshall Foiles prepare for some outdoor work with a 11/12 GHz front end. We did our outdoor stuff in the morning.

the bright sunlight works to our advantage with 'shadows' around the dish antenna farm at that time of day, and then after a lunch and often a swim, we'd retire into the air-conditioned studio for a round of table-top shooting in the afternoon. Bo quickly developed some natural skills in front of the camera and in the 12 hours or so of raw tape we shot, one can see him 'mature' as a before-the-camera person. We even had him talking like a TV person when he left; using such 'catch phrases' as 'cut,' or 'that's a wrap.' **Bo learns quickly.**

You would think that in a week's time, you could shoot enough tape to do several two-hour-edited 'documentary TV pieces.' Alas, there are distractions, there are always microphones that quit when they should not quit, cameras that refuse to 'balance' and the lure of swimming or just playing with the 20 foot monster dishes to 'see what it looks like.' Two days after I departed Bo and Kathryn at the Miami airport, I had a new list of things we 'should-have-shot' when Bo was on hand. I guess he will just have to come back again, soon, so we can finish up the project.

Dealers with service shops will, we feel, find Bo's explanation of BDC system design, installation and troubleshooting very informative and enlightening when the tape is released this fall. There is a considerable satisfaction that goes with a project such as this and Bo and I will both be anxious to have your feedback on how the 1987 version can be improved!

VISIT To M/A-Com

The last time I hopped a jet commuter into Boston's Logan Airport was back in 1979. For more than a year I had been routinely flying into Logan from Oklahoma City or other points and I had become quite accustomed to the Hudson Bus Lines limo ride that wanders through

downtown Boston, Chelsea and a host of inner-Boston neighborhoods to finally break free into the heavily wooded countryside of northeastern Massachusetts just south of New Hampshire.

Between 1976 and 1979, I came to know and appreciate 'the magic that is M/A-Com' from a very interesting point of perspective. My 'mentor' there was **Dana W. Atchley, Jr.** who when I first met him was Chairman of the Board of M-A (or Microwave Associates as the firm was then called). I like to start at the top and it was a measure of Dana's uniqueness in the business world that I was allowed to start at the top.

Dana was one of the pioneers at this amazing firm and he brought to M-A a background which ideally suited the challenges of American microwave firms in the late 50s and 60s. That was a period where individual entrepreneurs could take some used test equipment, a rented loft and start building 'high tech' microwave parts to become overnight millionaires. Not unlike the personal computer market of the 70s. **Dana had a special talent for recognizing other people's special talents.** He also had an edge on more management-oriented Harvard Business School graduates; **he was a 'ham radio operator'.**

In the 50s and 60s, ham radio was where all of the really creative things in communications hatched. Slow-scan television, low cost radio teletype, bouncing communications signals off the first 'real satellite' (the moon); hams did all of this and far more. Dana paid very close attention to **which hams**, anyplace in the world, were doing these 'leading edge' things and he made it a point to get to know these innovators. Many of them ended up working for M-A because Dana gave them a laboratory, a budget and some incentives to turn 'crazy ham ideas' into practical circuits and hardware which Microwave Associates could rush to market. So while other young microwave firms were busy hiring PhDs and engineers fresh out of Stanford, Dana was filling up his labs with people like **Sam Harris**, a totally maverick ham radio nut from the boonies of Ohio. Sam Harris would create something called 'the parametric amplifier' after joining M-A. You have to be older than 40 and reasonably knowledgeable about electronics to remember that the parametric amplifier was the grandfather of today's LNAs. Sam Harris would one day leave M-A, moving to Puerto Rico where he would take on the responsibility of keeping the giant 1,000 foot Arecibo (Puerto Rico) dish system operating. Sam died in Puerto Rico after turning the world's largest deep space dish into the most productive tool ever created by mankind for exploring the heavens. **Dana had a part in this;** he took 'crazy Sam' out of Ohio's backwoods and handed him a lab and a budget and told him to do something significant.

There are dozens of 'Sam Harris' stories in the history of M/A-Com. They all trace back in one direct or indirect fashion to Dana W. Atchley, Jr. Dana is today **'Chairman of the Board Emeritus'**, a special title and position for a special man. He is the only grandfather I know who drives a Chevrolet station wagon back and forth on the Massachusetts turnpike with a \$2,000 wind surfing board lashed to the top. He is also the only grandfather I know who routinely pulls off the side of the road, parks his wagon, unlashes his 'wind surfing board', dons a wet suit in the bushes just off the roadway and then lugs the wind surfing contraption across a field into somebody's lake or pond because he 'likes the way the wind currents are blowing'.

Wind surfing is something Dana has picked up since we last spent time together. **"It is adding years to my life"** he said matter of factly.

Dana admits to spending 10% of his time in his still active office but those who know him best, such as M/A-Com engineering genius **Fred Collins** (another and excellent example of the Dana skill in selecting a 'ham' with great engineering talents), suggest that Dana spends **110%** of his time working out M/A-Com problems. Even when he is wind surfing, whether it is on a backwater pond in Maine or off the beach in Barbados.

"You do have wind surfing on Provo?" he asked over a meal. I told him we think we invented it on Provo. Three minutes later he and Fred Collins had made a decision. This fall, coincidental with an annual 'ham radio contest', they would come to Provo to visit me. I would install some special antennas for the contest and turn my ham radio station over to them. They would wind surf in the daytime and operate ham radio at night. I knew better than to ask when they would sleep. I did mention that they might have to learn to 'wind surf' when surrounded by **nudes** since many of the **Club Med** wind surfers on the

bay in front of my home do it 'in the buff'. Wind surfing, for those who have never studied the sport, involves a constant test of your strength and stamina, and it challenges your sense of body and weight balance. I would have great difficulty doing it properly. Dana is nearly 25 years my senior. My Club Med image, portrayed in some graphicness, brought an instant Dana response.

"I'll have to learn to shift my weight to compensate for an erection" said he.

Dana 'erected' an entire company in his own image. Today's approaching-one-billion dollar M/A-Com went on a corporate buying binge in the 1980-81 era. They acquired ten different firms in a 12 month period ranging in value from 5 to \$100,000,000. Everything in sight (Prodelin, for example) that could contribute to their corporate business plan of becoming a **totally integrated** microwave communication system supplier was fair game in those days. This was not the same company Dana created; it was a new company in a new form which the 1980s demanded. But much of Dana's wisdom stayed around, thank God. A less sophisticated management would have granted Dana special visiting privileges to the annual Christmas party and sent him out to pasture. Fortunately for M/A-Com (renamed because the firm, after acquisitions, represented a far broader corporate business base than the old Microwave Associates), Dana retained an office and became their 'international ambassador'.

James F. Bunker, the man I spent so much time with while there this trip, remembers starting out with Microwave Associates some 25 years or so ago.

"I was a very young sales-engineer. At one of the first trade shows I attended, somebody screwed up and I didn't have a room at the hotel. Dana heard about my problem and insisted I move in with him. It was a pretty heady experience for me to bunk in with the corporate President!"

Jim also remembers that Dana would be 'on the floor' walking around the engineering labs every morning, bright and early. Since Dana had a hand in selecting or coercing many of the young ('ham') engineers working for the firm, he knew them on an intimate, first name basis.

"I found out why Dana was such a success" recalls Bunker. "He would ask the engineers about their progress, and he would ask them to explain **exactly** what they were working on. I don't know how many times I heard him say to an engineer '**Suppose you changed this and made it do that**', indicating some change that had occurred to him as the engineer explained his work. We got more new products that way than from all of our R and D. Dana has an amazing capacity to listen to the concepts of some project, and then make one or two suggestions, or ask one or two questions, which results in an entirely new direction for a stalled project."

Bunker refers to Dana as 'his' mentor. An accurate and complete list of people who call Dana 'my mentor' at M/A-Com would be almost as long as the employee roster itself. I don't work for M/A-Com, and other than some consulting work I did at Dana's request in the 1978-79 era, I never have. But I thought about it more than once.

Dana called me on the telephone one day out of the blue. I had written an article describing a concept I had for a very low cost video microwave. I was trying to get some type of video microwave system going which would allow a cable television system to shoot picture and sound over a 2 to 5 mile path for a targeted \$1,000 per channel.

"**The RF portion is your problem, right?**" asked this person on the other end of the telephone. I admitted it was. "I have a gadget here that might solve that" I heard the voice say; "I call it a Gunnplexer". Shortly thereafter I was on an airplane flying to Boston.

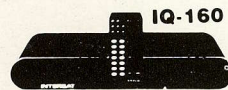
Through the years I spent a considerable amount of time with Dana. I was introduced to his son Dana III along the way and if you are into reading 'credits' at the end of **Showtime** or **PM Magazine** or **Chuck Braverman** productions, you may have noticed '**Dana W. Atchley, III**' rolling by. Dana III did all of the videotape work for us at our first SPTS '79, and '80 TVRO industry trade shows as well as considerable work for me when we were creating uplinks for the CATV industry via satellite back in the 70s. One of the most memorable trips I ever took was with Dana, Jr., into the backwoods of Colorado, where we videotaped a series of technical pieces explaining the eventual Microwave Associates 'Videoplexer' product; the first commercial video microwave product to come out of my original concept for a

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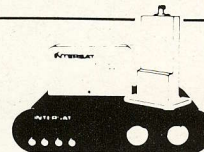
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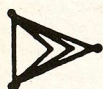
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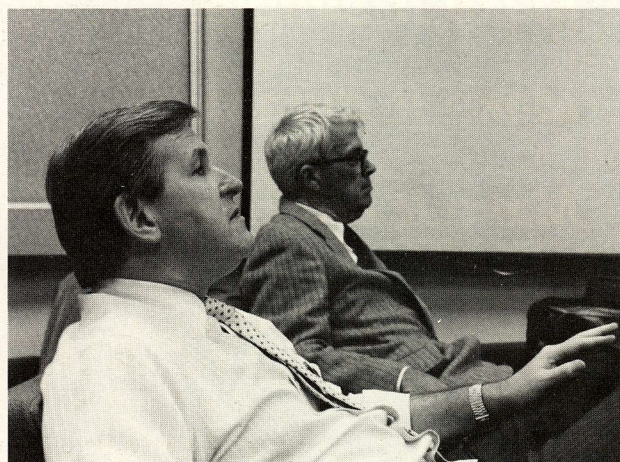
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BUNKER AND 'MENTOR'/ Dana W. Atchley, Jr., Chairman of the Board Emeritus for the firm and perhaps its best known former or present 'employee' sits with Bunker reviewing original videotapes shot BY CSD for use on BORESIGHT this month. The firm now has more than 11,000 employees.

video 'Gunnplexer' package. With Dana III producing and directing 'the shoot' we created promotional and product application tapes which for years played at cable industry trade shows.

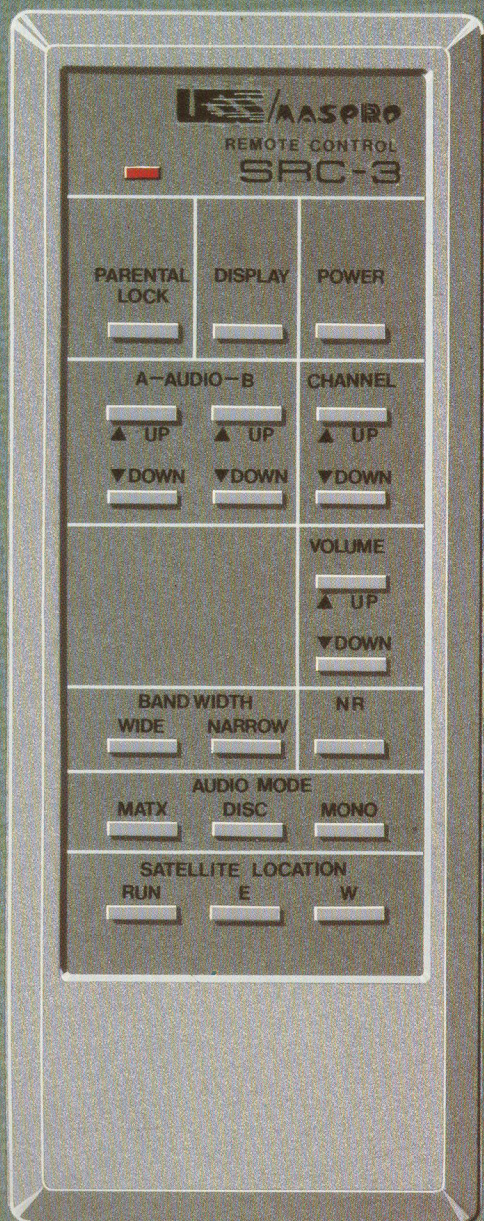
When I instinctively knew that the battle between M/A-Com/HBO, and, I had gone too far, this past spring, I began to ponder how to settle the war so that neither side would 'lose face'. My first instinct was to call Dana, whom I had not talked with in years. But I felt that was an imposition on our friendship and I also knew that if he wanted to 'get involved' in this 'war' I'd hear from him anyhow.

Late in April, recognizing that the cable television MSOs were about to enter the battle as well and open a 'new front' in the process, I picked up the telephone and called **Fred Collins**; the M/A-Com engineering leader. After some remembrance talk about ham radio, I asked Fred what he knew about the problems M/A-Com was having in the marketplace in the Videocipher field. He told me what he knew and I suggested that it 'might be useful if I came to Boston and I sat down with Jim Bunker and Dick DiBona'. **"We can't be any further apart than we already are and sitting down and talking this out might reduce the hostilities somewhat. I am very willing to listen and I suspect that after I am told what a bastard I am, they will be willing to listen as well"** I offered. Then I closed by asking about Dana and suggested that it would be good to see Dana again, **knowing full well** that Dana would be right in the middle of every meeting I held. Or at least I hoped so since Dana was my link to the past at the old Microwave Associates.

I didn't need to worry about Dana being around. His usual direct self, he greeted me with an expletive and offered **"Well, you really have us screwed up on this scrambling thing"**. Sixty seconds later, Bunker was in the middle of an 'off-the-record' story concerning HBO apparently having decided that **if Dana** treated me like 'one of the inside guys' I probably must be OK, even **if I had** spent the better part of the last eight months publishing his name in **'bold face print'**.

I'm not sure that my quick trip to Burlington-via-Boston would have produced anything but semi-polite small talk had it not been for the overriding influence of Dana W. Atchley, Jr. I'm also not sure that anything really productive will come out of the visit down the road six months but I do know this; our small TVRO world has gotten frightfully complex in the past 12 months and nobody can function in it very well, or for very long, without some help from his friends. I am especially grateful for friends I have in this industry, worldwide, like Dana W. Atchley, Jr. and for their quiet, on-going contributions to both technology, and most important, 'human-common-sense'.

'Your beach' will be waiting in October, Dana. We'll even write a computer program to see if we can work out the 'weight compensation problems' associated with wind surfing on Grace Bay with an erection. That ought to be a 'snap' for someone with as many friends as I have.



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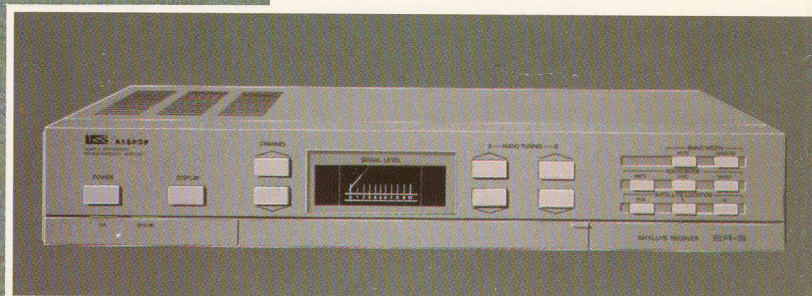
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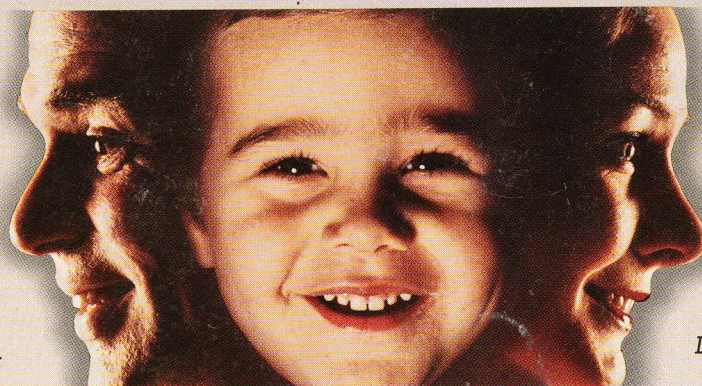
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